PTC 468(N)
500



GOVERNMENT OF INDIA

TARIFF COMMISSION

# REPORT

ON

# THE FAIR SELLING PRICES

OF

# DRUGS AND PHARMACEUTICALS

BOMBAY, 1968

*Price* : (Inland) *Rs.* 78·50 (Foreign) 183*s.* 2*d. or* $28 26 *Cents.*

**India, Tariff (—Commission)**

Report on the Fair Selling Prices of Drugs and Pharmaceuticals, 1968.

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MINISTRY OF PETROLEUM AND CHEMICALS & MINES & METALS

**(Department of Petroleum & Chemicals)**

*New Delhi, the 30th April* 1970

## RESOLUTION

**No 3 (52)/68-CH III.**—The Government requested the Tariff Commission in August, 1966 to examine the cost structure of 18 essential drugs and make recommendations about their prices and some other related matters (*vide* former Ministry of Commerce letter No 20(3)-Tar/66, dated the 25th August 1966) The Commission conducted the enquiry under Section 12(d) of the Tariff Commission Act, 1951, and submitted its Report in August 1968 (*vide* Tariff Commission's letter No TC/ID/P 31/68, dated the 28th August, 1968)

2 The terms of reference to the Commission and the Summary of Recommendations and conclusions of the Commission are attached at Annexures I and II

3 The 43 conclusions and recommendations of the Commission may be conveniently grouped together under the following heads —

A. Cost structure of drugs and fair selling prices Nos 32 to 43

B. Improvement in price control administration Nos 3 and 29.

C. Review and improvement of industrial licensing of drugs : 8, 9, 11, 12, 22 to 27.

D. Standards and quality of drugs and administration of the control law 4 to 7, 10,19, 20 and 28

E. Imports and exports of drugs : 14, 15, 30 and 31.

F General 1, 2, 13, 16, 17, 18 and 21

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F General 1, 2, 13, 16, 17, 18 and 21

4.0. Government's decisions are as follows:—

*A. Cost structure of drugs and fair selling prices*

4.1. The prices of the following 17 drugs shall be as follows:—

| | Price to be fixed by Govt. |
|---|---|
| 1. Vitamin A | Rs. 391·00/1000mu |
| 2. Vitamin C | Rs. 72·70/Kg. |
| 3. Sulphadiazine | Rs. 58·89/Kg. |
| 4. Tetracycline HCD | Rs. 850/Kg. |
| 5. Chloroquin Phosphate | Rs. 259·53/Kg. |
| 6. Streptomycin | Rs. 295/Kg. |
| 7. Chloremphenicol | Rs. 357·66/Kg. |
| 8. Amodiaquin | Rs. 106·91/Kg. |
| 9. Chlorpropamide | Rs. 95·60/Kg. |
| 10. Tolbutamide | Rs. 74·16/Kg. |
| 11. Prednisolone | Rs. 11,946·21/Kg. |
| 12. I.N.H. | Rs. 126·16/Kg. (if manufactured through indigenous picolines and Rs. 66·79/Kg. if manufactured through imported cyanopyridines). |
| 13. P.A.S. | Rs. 31·28/Kg. |
| P.A.S. Acid | Rs. 41·83/Kg. |
| 14. Iodochloro-Hydroxyquinelene | Rs. 65·68/Kg. (for production from basic stage), and Rs. 45·14/Kg. (for others). |
| 15. Penicilln : | |
| Potassium | Rs. 0·40/MU |
| Procaine | Rs. 0·50/MU |
| Sodium | Rs. 0·50/MU |
| Potassium V | Rs. 0·80/MU |
| 16. Tetanus Anti-toxin | Not to be fixed for the present. Price will be fixed when bulk supplies are made by the producers. |
| 17. Vitamin B12 | Rs. 100/gm. |
| 18. Insulin | Rs. 4900/MU |

1.2 As regards formulations, the Government have decided to bring the 49 formulations studied by the Commission as well as all other formulations within a system of price control the main features of which are

(i) the prescription of a formula for price fixation namely

$$RP=(MC+CC+PC) \times \left(1+\frac{MU}{100}\right)$$

where RP is retail price,

MC is materials cost and includes the cost of the basic drugs and pharmaceuticals acids

CC is the conversion cost or the cost of formulation,

PC is the packing charges and includes the cost of packing materials and packaging expenses, and

MU is the mark up and is meant to cover forwarding charges promotion expenses after sales services and trade commission right up to the retail level

(ii) the prescription of norms for determining the individual components of the formula

(iii) the fixation of mark up, for arriving at retail prices at 75% of the manufacturers' cost, in the case of all existing ordinary drugs, a higher mark up of 100% for a period of three years in respect of new products evolved as a result of special product development work and 150% for a period of not more than five years in the case of new drugs which are products of original research containing new therapeutic ingredients within the meaning of clause 6(B) of Drugs Prices (Display and Control) Order 1966

(iv) provision for a higher mark up in respect of formulations of non-essential bulk drugs (not being products of original research) not exceeding the ceiling of 150% subject to the manufacturing units concerned observing certain procedure such as maintenance of separate accounts etc, in order to encourage marketing of selected products of importance to the national health and well being and promote exports, etc while at the same time keeping the overall margin within the reasonable limit, and

(v) Opportunity to the industry to self-discipline itself in accordance with the above principles subject to Government's supervision and powers of refixation.

4.3. The margins for the trade shall be different for ethical drugs and non-ethical drugs as recommended by the Commission: 12% for the retailer and 8 per cent for others in the case of ethical drugs and 10% for retailers and 5% for others in the case of non-ethical drugs, calculations being made on the basis of retail prices fixed as above.

4.4. A suitable Control Order incorporating the above point will be promulgated soon.

*B. Improvement in price control administration*

5. It has been decided to strengthen and streamline the machinery dealing with price control administration. For this purpose a suitable Committee will be set up either in the Ministry of Petroleum & Chemicals & Mines & Metals or under the aegis of Bureau of Industrial Costs and Prices.

*C. Review and improvement of industrial Licensing of drugs*

6. Licensing procedures will be tightened up with a view to remove the anomalies pointed out by the Commission. The circumstances in which excesses over licensed capacities have come into being will be investigated and regularised wherever necessary on condition that a reasonable portion of the benefits of the economies of scale inherent in larger capacities is made available to the society at large either through exports or lower prices.

*D. Standards and quality of drugs and administration of the control law*

7. An effort is being made to evolve acceptable and convenient generic names.

*E. Imports and Exports of drugs*

8. The Government agree that some system of pooling is desirable with a view to ensure the availability of raw materials and intermediates at the same rates for different manufacturers and that no unfair advantage accrues to a particular manufacturer or a group of manufacturers. Canalisation of the import of bulk drugs wherever possible is the accepted policy of the Government.

F *General*

9 0 Government do not accept the recommendations of the Commission on the banning of the use of capsules

9 1 Government have noted the general recommendations Nos 16, 17 and 21 and suitable action will be taken on them wherever possible

10 In conclusion Government places on record its appreciation of the work done by the Tariff Commission and the report submitted by it

ORDER

ORDERED that a copy of the resolution be published in the Gazette of India and a copy thereof communicated to all concerned

B MUKERJI

*Secretary to the Government of India,*
*Ministry of Petroleum and Chemicals and Mines & Metals*

## ANNEXURE I

### TERMS OF REFERENCE

(1) To examine the cost structure of eighteen specified drugs and recommend to what extent the prices of the drugs can be lowered taking into consideration among other factors the following :

(a) Capital outlay including plant and machinery in relation to (i) actual production and (ii) potential capacity

(b) Prices and quantities of raw materials and intermediates

(c) Operation efficiencies of the processes

(d) Allocation of direct overheads particularly large sums spent on advertisements, distribution of free samples employment of highly paid sales man, sales promotion activities and other incentives

(e) Prices at which similar products can be manufactured by small scale manufacturers who do not come within the purview of Industries (Development and Regulation) Act

(f) To determine the prices at which the bulk drugs should be made available to other processers

(2) To examine and recommend to what extent prices of essential formulations of the drugs specified can be reduced taking into account among other factors, the following :

(a) Difference in prices of the formulations when sold under brand names and common names and prices quoted against Government tenders and to the general public

(b) Indirect elements such as management expenses promotional expenses and sampling

(c) Reasonableness of cost of containers, printing of labels leaflets and other literature

(d) Prices at which such formulations are sold by manufacturers to Government as also to prices at which bulk drugs manufactured by them are sold to other formulators

(e) To determine the reasonable relationship between ex factory cost of a finished preparation and its consumer prices

(f) Other factors mentioned under first terms of reference (1) which are relevant

(3) To recommend the minimum and maximum margin of profit covering all stages from the producer to the ultimate consumer

(4) To recommend measures necessary to bring down the level of prices of basic drugs pharmaceutical chemicals and intermediates and formulations of drugs

(5) To make any other recommendations which are considered relevant and which may have a bearing to bring about reduction in the cost of production and sale of drugs in India

## ANNEXURE II

## SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Our conclusions and recommendations are summarised below :—

(1) Though the actual terms of reference relate to price reduction we have interpreted the reference in terms of the provisions of Section 12(d) of the Tariff Commission Act as an inquiry on prices of drugs.

(Paragraph 1·2)

(2) The scope of the inquiry covers (1) the 18 specified drugs sold in bulk; (2) single drug formulations of the specified drugs each containing any one of the specified drugs as its major therapeutic ingredient; and (3) multiple drug formulations of the specified drugs each containing two or more of the specified drugs only without addition of drugs outside the list.

(Paragraph 2·2)

(3) The difficulties mentioned by the Director, Drugs Control Administration, Maharashtra in the implementation of the Drugs Prices (Display and Control) Order, 1966 may be considered and suitable modifications introduced.

*(Paragraphs 4.2.9 and 4.2.10)*

(4) There ought to be uniformity of standards of administration, testing approval and other matters regulating manufacture of drugs. Policies may be devised and implemented in such a way that the present disparity in these standards is removed.

(Paragraph 4.3.5)

(5) Steps may be taken both by Government and by the drugs and pharmaceutical industry to arrive at uniform classifications and sub-classifications of the basic drugs. Information may be collected and published for these on uniform lines.

(Paragraph 6.1.4.)

(6) Steps may be taken to ensure that State Drugs Controllers maintain records of the licences issued by them to manufacturers of drugs and these records should be readily available. It is also desirable that the list of such licences is published periodically on a Central basis for the whole country and it should contain the names of the units with location, year of grant of licence, drugs and formulations specified in the licence, installed capacity and annual production in terms of the quantity of formulations and drugs to be manufactured or suitable aggregates of the same.

(Paragraph 6.3.3.)

(7) Even though there are more than 2,000 small scale units and each one functions under a licence, very little information is available in respect of their activities and contribution to the pharmaceutical industry. The State Drugs Controllers should collect information annually in respect of the small scale units on the lines indicated in paragraph 6.3.3.

(Paragraph 6.3.3.)

(8) There are cases where the licensed capacities of units for manufacture of basic drugs are substantially higher than the capacities installed. While it is desirable to recognise the higher installed capacities where these have been established, it would be equally advisable to reduce licensed capacities where these have not been set up within the period stipulated for installation. This would be conducive to more healthy growth of the industry and would lead to more scientific assessment of the requirements of the industry particularly in regard to foreign exchange and the size of other supporting industries producing raw materials.

(Paragraph 7.1.6)

(9) In the drugs and pharmaceuticals industry as in many other industries, on the one hand quite a number of licences issued for installation and expansion have remained dormant, on the other, there are numerous cases where installed capacity has exceeded the licensed capacity and been permitted to so exceed with *ex post facto* approval in selected instances on the ground of increased pro- [illegible]

(*Paragraph 7.1.7*)

(10) Suitable additions may be made to the Drugs and Cosmetics Rules for specifying the capacity of small scale units licensed or approved to manufacture basic drugs.

(Paragraph 7.1.8)

(11) The under utilisation of capacity for the specified basic drugs does not reveal a healthy picture of the drugs industry. Extensive replanning is needed for achieving greater utilisation of capacities especially in the case of the units manufacturing the specified basic drugs.

(Paragraph 8.2.2)

(12) Steps need to be taken to ensure that the units licensed to manufacture basic drugs set up capacity within a stipulated period of time or the licence should be revoked. In the case of drugs which have to be imported owing to lack of adequate capacity, this principle should be enforced with greater vigour.

(Paragraph 9.4)

(13) Our estimates of consumption of the specified basic drugs for the years 1968, 1969 and 1970 are given in Table 11.4.

(Paragraph 11.5)

(14) [illegible]
different manufacturers and there is no unfair advantage to a particular manufacturer which is not available to the rest.

(Paragraph 12.1.5)

(15) It would be desirable to permit imports at concessional rates of customs
y in respect of specific raw materials and intermediates which are needed by
e drugs and pharmaceuticals industry, until such time as indigenous capacities
such raw materials and intermediates are set up.

(Paragraph 12.1.5)

(16) A stage has now been reached when slaughter houses have to be used not only for providing meat as an item of food but also as source of some of the important medicinal and biological raw materials. The States must therefore take in hand the regulation of large slaughter houses in such a way that the by-products are not wasted but can be retrieved and utilised for medicinal and therapeutic purposes.

(Paragraph 12.2.8)

(17) The quality of materials like glass containers, rubber stoppers and aluminium strips and the lack of uniformity in these need the close attention not only of the industry but also of Government and its various agencies which control and regulate production and quality in order to ensure that the indigenous industry is not found wanting even in those spheres where self-sufficiency is claimed but has not been achieved owing to lack of quality and conformity to specification. Attention needs also to be paid very closely to the arrangement for raw materials and intermediates not produced by making their supply certain. Schedules need to be drawn up for this purpose in order to insure that with a certain degree of vigilance of programme planning uncertainties are eliminated.

(Paragraph 12.2.8)

(18) It would be desirable to emulate the example of many advanced countries of Europe, particularly Denmark where no drugs in the form of capsules are marketed and drugs are sold in the form of tablets so that the use of imported Gelatine may be eliminated and foreign exchange saved.

(Paragraph 12.2.8)

(19) The existing legislation in our country recognises both generic names as well as brand names, but it is incumbent on the manufacturer to enter the generic name also prominently on the container. It would be desirable to revise generic names and introduce an abbreviated nomenclature for the purpose of drug manufacture with short, distinctive and easily spelt out names.

(Paragraph 13.2

(20) Wherever preparations are prescribed in the form of combinations of tw
or more ingredients it should be incumbent on the manufacturer who mark
such combinations to present to the Drugs Controller, Government of Ind
pharmacological and clinical data not only to prove the efficacy but also the
periority of such combinations over the straightforward preparations inclu
in the pharmacopoeia or the National Formulary. When such clinical data
presented the manufacturer should also suggest a generic name for it which
acceptable, would form a generic name for that product and, if not accepta
it may be open to the controlling authority to suggest an alternative ge
name.

(Paragraph 1

(21) The Patent Law is essentially meant to encourage inventions and
national interest. Hence, all precautions need to be taken to see that p
which are granted in our country either in respect of indigenous or f
inventions are not abused, *i.e.*, are not utilised to prevent further develo

(Paragraph

(22) In the interests of saving of foreign exchange as well as possible economy of costs Parke Davis, a manufacturer of the basic drug, Amodiaquin, should [illegible]

[illegible]

so that it can meet the demand of other units also

(Paragraph 15 7 1)

(23) It would be desirable for the other units producing the basic drug chlorpropamide to utilise the same process as adopted by Bengal Immunity Co or alternatively a more efficient one or purchase locally produced intermediates.

(Paragraph 15 7 1)

(24) 8 hydroxyquinoline or dichloronitrobenzene needed for the manufacture of Iodo-chloro-hydroxy-quinoline should be produced locally

(Paragraph 15 7 1)

(25) It is desirable to go into the reasons for the high cost of production of Vitamin-A by Glaxo Laboratories and if they are due to any process deficiencies, they should adopt the more efficient process of Roche Products

(Paragraphs 15 7 2 and 28 2.2.)

(26) Sarabhai Merck should pay serious attention to the reasons for the low yield of Vitamin-C obtained by it.

(Paragraph 15 7 3)

(27) It is relevant to consider whether manufacture of sulphadiazine involving a perpetual drain of foreign exchange for importing raw materials should be continued once the manufacture of sulphadimidine from predominantly indigenous raw materials is established.

(Paragraph 15 7.4)

[illegible]

in the large scale as well as the small scale sectors

(Paragraph 17.13)

(29) The anomalies pointed out by the manufacturers associations in the procedures of Central and State Excise Authorities should be removed.

(Paragraph 19.4 4)

(30) Imports of basic drugs should always be related to the requirements of the country. Indian economy has not yet reached a stage and particularly [illegible]

form of quantitative restrictions of imports and if such protection is withdrawn all of a sudden and the industry is exposed to foreign competition, disastrous consequences are likely to ensue. These have been amply demonstrated during our enquiry for the 18 drugs, when in the case of not less than six items, the fall in the domestic production and setback to the industry has resulted from unplanned imports based on such estimates of production and demand, which were neither realistic nor helpful to the consolidation and development of the domestic units. Basic manufacture of drugs in the country has been established after considerable efforts and no steps should be taken which may retard the progress already made.

(Paragraph 20.7)

(31) Unless the costs of production of basic drugs are brought down drastically, it is not possible to build up any substantial exports, except at the cost of the internal market and by selling our products at less than half the cost.

(Paragraph 21.7)

(32) Sales promotion may be considered unobjectionable in the case of new drugs provided that no unsubstantiated claims are made but it should not be as relentless as it appears to be at the present moment in the case of already well established drugs and in any case the total expenditure on sales promotion should not exceed ten per cent of the ex-factory cost of the drug.

(Paragraph 22.2.4)

(33) The domestic prices of the selected drugs are generally very much lower in most cases in other countries.

(Paragraph 24.5)

(34) By and large, the prices in the Indian market of formulations compare favourably with the prices of similar formulations in the domestic markets of other countries.

(Paragraph 24.7)

(35) The price disparities of drugs sold under brand names and generic names are not because of these names but because of the units which manufacture them. Price differentials are in the present analysis more a factor of standing and size of the units than of the brand name itself.

(Paragraph 24.12)

(36) A commission of 25 per cent (15 per cent to the retailer and 10 per cent to other intermediaries), may be allowed for ethical drugs. The commission allowed for non-ethical drugs may be 15 per cent, *i.e.*, 10 per cent for the retailer and 5 per cent for other intermediaries.

(Paragraph 26.4)

(37) The sales turnover is roughly equivalent to the capital employed in the case of manufacturers of basic drugs, very much higher in the case of composite units and the highest for formulators only. Manufacture of basic drugs is a capital-intensive activity and the profitability is to be judged from the point of view of the capital employed. On the other hand, formulating activity by itself is not capital-intensive and profitability is related to the sales turnover since capital employed is about half of the amount of sales turnover.

(Paragraph 27.4.8)

(38) The fair ex-works selling prices recommended by us for the specified basic drugs are given in Table 28 2

(Paragraph 28 20 1)

(39) [illegible]

(Paragraphs 29 9 and 29 10)

(40) [illegible] be revised.

(Paragraph 29 11)

(41) [illegible]

(Paragraph 29 12)

(42) Our findings on cost of production of basic drugs by small scale units are given in paragraph 30 2.

(Paragraph 30 2)

(43) Small scale formulating units do not afford any particular economy in comparison with those of the organised sector

(Paragraph 30 1)

## Table-28.2

*Fair ex-works selling prices recommended for basic drugs*

| | |
|---|---|
| 1. Vitamin A . . . . . | Rs 391 000 per 1000 m u |
| 2. Vitamin B12 . . . . . | Rs 113 84 per gm. |
| 3. Vitamin C . . . . . | Rs 72 70 per kg. |
| 4. Sulphadiazine . . . . . | Rs 58 89 per kg |
| 5. Penicillin Potassium G . . . | Rs. 0·351 per m u. |
| 6. Sodium Penicillin G . . . | Rs. 0·399 per m u. |
| 7. Procaine Penicillin . . . | Rs. 0 336 per m u. |
| 8. Potassium Penicillin V . . . | Rs. 0 357 per m u |
| 9. Streptomycin . . . . | Rs. 285 00 per kg |
| 10. Chloramphenicol . . . . | Rs. 357 60 per kg |

| | |
|---|---|
| 11. Tetracycline . . . . | Rs. 703·25 per kg. |
| 12. Amodiaquin . . . . | Rs. 105·91 per kg. |
| 13. Chloroquin Phosphate . . . | Rs. 259·53 per kg. |
| 14. Iodochlorohydroxyquinoline . . | Rs. 45·14 per kg. |
| 15. Chlorpropamide . . . . | Rs. 95·69 per kg. |
| 16. Tolbutamide . . . . | Rs. 74·16 per kg. |
| 17. Insulin . . . . | Rs. 5137·56 per m.u. |
| 18. I.N.H. . . . . | Rs. 91·53 per kg. |
| 19. P.A.S. . . . . | Rs. 31·26 per kg. |
| 20. P.A.S. Acid . . . . | Rs. 41·83 per kg. |
| 21. Tetanus Anti-toxin . . . | no price fixed |
| 22. Prednisolone . . . . | Rs. 11,936·21 per kg. |

## CONTENTS

## APPENDICES

# REPORT ON THE FAIR SELLING PRICES OF DRUGS AND PHARMACEUTICALS

## CHAPTER 1

### ORIGIN OF THE CASE AND REFERENCE TO THE COMMISSION

1.1 Inquiry into the prices of drugs and pharmaceuticals was entrusted to us under Section 12(d) of the Tariff Commission Act, 1951 through the letter of the Government of India, Ministry of Commerce, dated August 2?, 1966. In making this reference to us Government observed that prices of drugs and medicines in India were reported to be high as compared to the prices of drugs and medicines prevailing in other countries and suggested that the matter may be enquired into.

The terms of reference are :—

(1) To examine the cost structure of eighteen specified drugs and recommend to what extent the prices of the drugs can be lowered taking into consideration among other factors the following :—

(a) Capital outlay including plant and machinery in relation to (i) actual production and (ii) potential capacity.

(b) Prices and quantities of raw materials and intermediates.

(c) Operational efficiencies of the processes.

(d) Allocation of direct overheads particularly large sums spent on advertisements, distribution of free samples, employment of highly paid salesman, sales promotion activities and other incentives.

(e) Prices at which similar products can be manufactured by small scale manufacturers who do not come within the purview of Industries (Development and Regulation) Act.

(f) To determine the prices at which the bulk drugs should be made available to other processers.

(2) To examine and recommend to what extent prices of essential formulations of the drugs specified can be reduced taking into account among other factors, the following :—

(a) Difference in prices of the formulations when sold under brand names and common names, and prices quoted against Government tenders and to the general public.

(b) Indirect elements such as management expenses promotional expenses and sampling.

(c) Reasonableness of cost of containers, printing of labels, leaflets and other literature.

(d) Prices at which such formulations are sold by manufacturers to Government *vis-a-vis* the prices at which bulk drugs manufactured by them are sold to other formulators.

(e) To determine the reasonable relationship between ex-factory cost of a finished preparation and its consumer prices.

(f) Other factors mentioned under first terms of reference (1) which are relevant.

(3) To recommend the minimum and maximum margins, of profit covering all stages from the producer to the ultimate consumer.

(4) To recommend measures necessary to bring down the level of prices of basic drugs, pharmaceutical chemicals and intermediates and formulations of drugs.

(5) To make any other recommendations which are considered relevant and which may have a bearing to bring about reduction in the cost of production and sale of drugs in India.

1.2. At the very outset a question arose whether the Commission's inquiry would be confined only to the examination of the issues of reduction of prices or was the Commission to adopt the usual procedure for working out the fair prices and making recommendations in respect of them irrespective of the fact whether reduction was occasioned or not. Though the actual terms of reference relate to price reduction we have interpreted

the reference in terms of the provisions of Section 12(d) of the Tariff Commission Act is an inquiry on prices of drugs. The next question that arose therefore at the early stages of the inquiry was whether we were in a position to make our recommendations to the Government if in any particular instance we came to the conclusion that the prices could not be reduced or that they were to be raised. In consideration of the provisions of the Act under which we are empowered to function, we came to the conclusion that we were not precluded from making recommendations with regard to the maintenance of *status quo* or if necessary even raising prices of any of the items to be inquired into by us. We have therefore proceeded to conduct this inquiry in accordance with these principles without any bias or presupposition with regard to the merits of the prices prevailing today.

1.3. Item Nos. 1 (a), (b), (d) and (f), 2(b), (c), (e) and (f) constitute elements of cost analysis and have been dealt with in chapters 28 and 29, for each of the items whose fair selling prices have been determined by us. Item 1(c) contemplates the comparison of costs as between the small scale and the large scale manufacturers and the necessary analysis has also been undertaken in chapter 30. Item Nos. 2(a) and (b) are not matters relating to cost analysis but refer to prices as they prevail now and have been dealt with in chapter 24. Item No. 1(c) is to a certain extent related to costing, but it has been dealt with in a separate chapter 15.

## CHAPTER 2

## SCOPE OF THE INQUIRY

2.1. The eighteen basic drugs referred to us for price investigation have been classified into nine categories namely, vitamins, sulphanamides, antibiotics, anti-malarial drugs, anti-dysentry drugs, anti-diabetic drugs, anti-tubercular drugs, anti-toxins and others. In the case of some of the drugs only the broad basic classification was given which was in consultation with the Ministry of Petroleum and Chemicals further classified in order to include salts and derivatives. A list of the basic drugs as mentioned by Government in their reference grouped by the categories mentioned above together with the salts and other derivatives of the basic drugs is as given in Table 2.1 :—

TABLE 2.1

*Specific basic drugs*

| Category/Name of basic drugs specified by Government | Its salt and derivatives specified by Government |
|---|---|
| 1 | 2 |
| *Vitamins :* | |
| 1. Vitamin-A . . . | Vitamin-A |
| 2. Vitamin-B12 . . | (a) Cyano-cobalamin<br>(b) Hydroxo-cobalmin |
| 3. Vitamin-C . . . | Ascorbic Acid |
| *Sulphanamides* | |
| 4. Sulphadiazine . . | Sulphadiazine |
| *Antibiotics :* | |
| 5. Penicillin . . . | (a) Benzyl Penicillin Potassium<br>(b) Benzyl Penicillin Sodium<br>(c) Procaine Benzyl Penicillin<br>(d) Potassium Phenoxy methyl penicillin |

TABLE-2.1—Contd

| 1 | 2 |
|---|---|
| 6 Streptomycin . . | (a) Streptomycin Sulphate<br>(b) Di hydro-streptomycin Sulphate |
| 7. Chloramphen col . . | Chloramphenicol |
| 8 Tetracycl ne . . . | (a) Tetracycline Hydrochloride<br>(b) Oxytetracycline Hydrochloride<br>(c) Chlortetracycline Hydrochloride<br>(d) Dimethyl Chlortetracycline Hydrochloride |
| *Anti-Malarial Drugs* | |
| 9 Amodiaquin . . . | Amodiaquin Hydrochloride |
| 10 Chloroquin . . . | Chloroquin Phosphate |
| *Anti-Dysentry Drugs* | |
| 11. Iodo-chlor hydroxy-quinoline | (a) Iodo-chlor hydroxy-quinoline<br>(b) Di-iodo-hydroxy-quinoline |
| *Anti-Diabetic Drugs* | |
| 12 Chlorpropam de . | Chlorpropamide |
| 13 Tolbutamide . . | Tolbutamide |
| 14 Insulin . . . | Insulin Plain |
| *Anti-Tubercular Drugs* | |
| 15 I.N.H . . . . | Iso-Nicotonic Acid Hydrazide |
| 16 P.A.S. . . . . | (a) Para amino-salicylic acid<br>(b) Para-amino-salicylic acid sodium salt. |
| *Anti Toxin* • | |
| 17 Tetanus Anti toxin . | Tetanus Anti toxin |
| *Others* • | |
| 18 Prednisolone . . | Prednisolone |

2 2 Government have asked us to examine and recommend prices of essential formulations of these specified drugs The number of formulations of the specified drugs being very large, the

Government of India were addressed for clarification with regard to the essential formulations of the specified drugs which they desired to be covered by our inquiry. The Ministry of Petroleum and Chemicals consulted the Directorate General of Technical Development (D. G. T. D.) and forwarded a note from the latter which stated that it would suffice if we considered single drug formulations only, that is, formulations consisting of any one of the specified drugs as a major therapeutic ingredient. The Drugs Controller, Government of India on the other hand expressed the view that in addition to covering single drug formulations the scope of the Commission's inquiry should also cover other formulations containing two or more of the 18 specified drugs. With the help of the discussions held with the representatives of the drugs manufacturers and also two of the Assessors who represented in their individual capacity both the D.G.T.D. as well as the drugs Controller, Government of India, we dicided that the scope of the inquiry should cover (1) the eighteen specified drugs as sold in bulk; (2) single drug formulations of the specified drugs each containing any one of the specified drug as its major therapeutic ingredient; and (3) multiple drug formulations of the specified drugs each containing two or more of the specified drugs only without addition of drugs outside the list. As a result we selected 39 essential single drug formulations of the specified drugs and 30 essential multiple drug formulations. The cost investigations of the Commission were therefore limited to the eighteen specified basic drugs and 69 formulations. The names of the single drug formulations together with basic drugs which constitute their major therapeutic ingredients are as given in Table 2.2. :—

TABLE 2.2.

*Single drug formulations Selected by the Commission for cost investigation*

| Sl. No. | Basic drug specified by Government | Single drug formulations selected by the Commission |
|---|---|---|
| 1 | 2 | 3 |
| 1 | Vitamin A . . . | (1) Vitamin A Injection |
| | | (2) Vitamin A Tablets |
| 2 | Vitamin B12 . . . | (3) Cyanocobalamin Injection |
| | | (4) Hydroxocobalmin Injection |
| 3 | Vitamin C . . . | (5) Ascorbic Acid Tablets |
| | | (6) Ascorobic Acid Injection |

TABLE 2.2—*Cont'd*

| 1 | 2 | 3 |
|---|---|---|
| 4 | Sulphadiazine . . | (7) Sulphadiazine Tablets |
| 5 | Penicillin . . . | (8) Sodium Penicillin G Injection |
| | | (9) Procaine Penicillin G Injection |
| | | (10) Penicillin G Procaine fortified with Penicillin G Injection |
| | | (11) Penicillin Tablets |
| 6 | Streptomycin . . | (12) Streptomycin Sulphate Injection |
| | | (13) Dihydrostreptomycin Sulphate Injection |
| 7 | Chloramphenicol . . | (14) Chloramphenicol Capsules |
| 8 | Tetracycline . . | (15) Tetracycline Capsules |
| | | (16) Oxytetracycline Capsules |
| | | (17) Chlortetracycline Capsules |
| | | (18) Chlortetracycline Ointment |
| | | (19) Chlortetracycline Spersoid powder |
| | | (20) Demethyl Tetracycline Capsules |
| 9 | Amodiaquin . . . | (21) Amodiaquine Hydrochloride Tablets |
| 10 | Chloroquin . . . | (22) Chloroquin Phosphate Tablets |
| | | (23) Chloroquin Sulphate Tablets |
| 11 | Iodo-chlor hydroxy-quinoline | (24) Iodo-chlor hydroxy-quinoline Tablets |
| | | (25) Di iodo-hydroxy-quinoline Tablets |
| 12 | Chlorpropamide . . | (26) Chlorpropamide Tablets |
| 13 | Tolbutamide . . . | (27) Tolbutamide Tablets |
| 14 | Insulin . . . . | (28) Insulin Injection |
| | | (29) Insulin Zinc Suspension Injection |
| | | (30) *Insulin Protamin Zinc Injection* |
| | | (31) Isophane Insulin Injection |
| 15 | I N H . . . . | (32) I N H Tablets |
| 16 | P A S. . . . . | (33) P A S Sodium Tablets |
| | | (34) Sodium P A S Granules |
| | | (35) Calcium P A S Tablets |
| | | (36) Calcium P A S Granules |
| | | (37) P A S Acid Granules |
| 17 | Tetanus Anti toxin . . | (38) Tetanus Anti-toxin Injection |
| 18 | Prednisolone . . | (39) Prednisolone Tablets |

2.3. In the case of single drug formulations it is possible to describe them by their generic names adopting basically the name of the specified drug and this has been generally done. In the case of multiple drug formulations it is not possible to identify the formulations by the generic name of the drugs contained therein, for the reason that each formulation contains two or more basic drugs as the major therapeutic ingredients. If we were to adopt a classification as for the single drug formulation, there would be only 10 categories of multiple drug formulations and in each of these there are a number of drugs under brand names. We have therefore classified them by their brand names for the sake of convenience. The number of the multiple drug formulations and their brand names are as given in Table 2.3:—

TABLE 2.3

*Multiple-drug formulations Selected by the Commission for cost investigation*

| Sl. No. | Nature of multiple-drug formulation | Brand name selected (of producers) |
|---|---|---|
| 1 | 2 | 3 |
| I. | Combination of different forms of Penicillin drug (Injections) | (1) PPF-4 Injection (Pfizer) |
| | | (2) PPF-20 Injection (Pfizer) |
| | | (3) CRYS-4 Injection (Sarabhai Chemicals) |
| | | (4) CRYS-8 Injection (Sarabhai Chemicals) |
| | | (5) CRYS-12 Injection (Sarabhai Chemicals) |
| II. | Combination of different forms of Streptomycin drug (Injections) | (6) Comycin Injection (Glaxo Labs.) |
| | | (7) Streptoduocin Injection (Hindustan Antibiotics) |
| | | (8) Duostrep Injection (Merk Sharp) |
| III. | Injection of Penicillin and Streptomycin | (9) Streptopenicillin (Hindustan Antibiotics) |
| | | (10) Mystrepton (Glaxo Labs.) |
| | | (11) Dupenmycin (Pfizer) |
| | | (12) Combiotic (Pfizer) |
| | | (13) Dicrystin-5 (Sarabhai Chemicals) |

TABLE 2.3—*Contd*

| 1 | 2 | 3 |
|---|---|---|
| | | (14) Penmyn Fortis (Sarabhai Chemicals) |
| | | (15) Seclomycetin Forte (Glaxo Labs) |
| IV. | Capsules of Chloramphenicol and Streptomycin Sulphate | (16) Chloramphycin S (Boehringer-Knoll) |
| | | (17) Gurcomycetin Strep (Gurco Pharma) |
| | | (18) Chlorostrep Kapseals (Parke-Davis) |
| | | (19) Chlorostrep Suspension (Park-Davis) |
| V. | Capsules of Chloramphenicol and Tetracyclines | (20) Tetrachlore (Gurco Pharma) |
| VI. | Injection of Tetracyclines and Vitamin C | (21) Achromycin Intravenous (Lederle-Cyanamid) |
| VII | Ointment of Prednisolone and Chloramphenicol | (22) Precin fortified with Opthalmic ointment (Alembic Chemical) |
| VIII | Tablets of Iodo-chlor-hydroxy-quinoline, Tetracyclines and Chloroquin Phosphate | (23) Tequinopil (OPIL) |
| IX | Tablets of Di-iodo-hydroxy-quinoline and Chloroquin Phosphate | (24) Dinochlor (Bengal Immunity) |
| | | (25) Nivembin (May and Baker) |
| | | (26) Diquinate (Martin and Harris) |
| X | Tablets of I N H and P A S . | (27) Isocadipas (Cadila) |
| | | (28) Isocalamisal (Zandu) |
| | | (29) Pasimecin (Alliance Trading) |
| | | (30) L C P (Gujarat Pharmaceuticals) |

## CHAPTER 3

## METHOD OF INQUIRY

3.1. Questionnaires were addressed to the basic drug manufacturers and formulators, hospitals and dealers in drugs and medicines, inviting data and their views on specific issues. Associations of producers as well as associations of trade were supplied with the relevent questionnaires and asked to furnish memoranda to the Commission on various issues concerning the inquiry. The D. G. T. D., the Drugs Controller, Government of India, the Director General of Supplies and Disposals and Government Medical Stores were addressed for information on specific issues connected with their departments. The Indian Embassies/High Commissions in the principal drug manufacturing countries particularly in France, Hungary, Italy, Japan, Switzerland, U. K., U. S. A., U. S. S. R., and West Germany were addressed regarding the local and export prices in these countries for the specified basic drugs and their formulations. A separate questionnaire was issued to State Drugs Control Administrations calling for information with particular reference to the administration of the Drugs and Cosmetics Act, 1940. A press note was issued inviting parties interested in the inquiry to obtain questionnaires and submit their views and suggestions. A list of those to whom questionnaires/letters were issued and those who replied is given in Appendix I. The extent of response from various parties concerned with the inquiry is indicated in Appendix II.

3.2. The representatives of the Organization of the Pharmaceutical Producers of India, Bombay and those of the Indian Drug Manufacturers Association, Bombay met the Commission separately and apprised it of their views.

3.3. Under the provisions of Section 18 of the Tariff Commission Act, Government may appoint as assessors one or more persons possessing special knowledge of any matter relevant to the inquiry to assist the Commission. To assist us Government appointed Shri S. K. Borker, the then Drugs Controller (India), Directorate General of Health Services, Dr. B. Shah, Industrial Adviser (Drugs), Directorate General of Technical Development, Dr. K. Ganapathi, Director, Regional Research Laboratory of the Council of Scientific and Industrial Research, Jammu and

as an alternate of Shri S K Borkar, Dr S S Gothoskar, Deputy Drugs Controller, Government of India, Western Region, Bombay

3 4 The Commission held discussions with the Officers mentioned above on various points of the inquiry on a number of occasions

3 5 The names of drugs and pharmaceutical units visited and the dates of visit by the Commission and its officers are given in Appendix III

3 6 A public inquiry was held on the 28th of February 1968 This was followed by discussions with the representatives of the costed units from the 1st of March to the 9th of March 1968 A list of persons who attended the public inquiry is given in Appendix IV

3 7 There are 34 large scale and 11 small scale units making a total of 45 which manufacture one or more of the basic drugs Twenty one of the large scale units and three of the small scale were selected for cost examination of the basic drugs manufactured by them Care was taken to ensure that where more than one unit manufactured a particular basic drug the cost of at least two units were examined In the case of formulations 25 units in the large scale sector and four in the small scale sector making a total of 29 manufacturing one or more of the single or multiple drug formulations were taken up for costing Of these units 19 are common to both basic drug manufacture and formulations Of the total of 399 units manufacturing formulations who replied to our questionnaire ten were selected for cost examination The classification of units by manufacturing activity and also the numbers of those selected for cost examination are as given in Table 3 1 —

TABLE 3 1

*Classification of manufacturing units Selected for costing*

| Particulars | Large scale units | | Small scale units | | TOTAL | |
|---|---|---|---|---|---|---|
| | Total | No costed | total | No costed | total | No costed |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 Units making basic drugs only | 4 | 3 | 7 | 2 | 11 | |

TABLE 3.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 2. Units making basic drugs and single drug formulations only . . . | 15 | 11 | 1 | Nil | 16 | 11 |
| 3. Units manufacturing basic drugs as well as single and multiple drug formulations | 15 | 7 | 3 | 1 | 18 | 8 |
| 4. Units manufacturing only single drug formulations . . | 20 | 2 | 336 | 2 | 356 | 4 |
| 5. Units manufacturing only multiple drug formulations . | .. | .. | .. | .. | .. | .. |
| 6. Units manufacturing single as well as multiple drug formulations . . . | 8 | 5 | 44 | 1 | 52 | 6 |
| TOTAL | 62 | 28 | 391 | 6 | 453 | 34 |

## CHAPTER 4

## STATE CONTROLS RELATING TO THE INDUSTRY

### 4.1 Laws relating to the manufacture and sale of drugs:

4.1.1 It is strange that legislation in respect of manufacture and sale of drugs in India was not initiated with a view to regulating indigenous manufacturing activity but was occasioned by complaints of sub-standard and spurious drugs imported from abroad. As a result of these complaints which were voiced vehemently in the later twenties of this century, the Drugs Enquiry Committee was appointed in 1930 which submitted its Report in 1931 and made recommendations for the enactment of a comprehensive all-India legislation for the control of drugs and pharmacies, setting up of adequate machinery for the control, inspection and testing of drugs to ensure uniformity of proper standards and of purity and strength. The Committee also recommended the setting up of a Central Drugs Laboratory as well as laboratories in the States, the constituting of Central Pharmacy Council and State Pharmacy Councils and Registration Tribunals for regulating the education and profession of pharmacy and registration of pharmacists.

4.1.2 In the earlier period there was only very sporadic and partial regulation of drugs and the earliest enactment in this respect was the *Opium Act of 1878*. The possession, transport, import as well as export and sale of opium were strictly regulated primarily to obtain revenue and secondarily with a view to its use either as a narcotic or as a drug under restricted conditions. The Act empowers State Governments to make rules for regulating [illegible] and sale of opium which [illegible] ppy (*ii*) the spontane- [illegible] (iii) any mixture with or without neutral materials, of any of the above forms of opium, but does not include any preparation containing not more than 0.2 per cent of morphine or manufactured drug. The punishment for contravention of the provisions of this Act is imprison*ment which may extend to one year or fine upto Rs. 1000 or both*. The Act also provides for the confiscation of the opium in respect of which the offence has been committed. Under the Act an officer of Departments of Excise, Police, Customs, Salt, Opium or Revenue, superior in rank to a peon or constable has powers

to enter any building or place, sieze opium, detain, search and arrest any perosn whom he has reason to believe to be guilty of an offence under the Act. But if the officer acts without reasonable ground or acts vexatiously or unnecessarily, he is liable to punishment with fine not exceeding Rs. 500/-.

4.1.3. The next is the *Poisons Act of* 1919. The purpose of the Act was to consolidate and amend the law regulating the importation, possession an sale of poisons. Under this Act, the State Government has powers to regulate by rules the possession for sale and the sale, whether wholesale or retail, of any specified poison, to prohibit the importation into the State of any poison except under a licence and to regulate the grant of licences as well as the possession of any specified poison in certain local areas. The penalty for any breach of the rules relating to the possession for sale or the sale of poison and for unlawful importation is imprisonment upto three months or a fine of Rs. 500 or both, on first conviction and six months' imprisonment or a fine of Rs. 1000 or both, on second and subsequent convictions. Further, any poison in respect of which the offence has been committed is liable to confiscation along with the vessels, packages or coverings in which the poison is found. The provisions of this Act do not, however, interfere with anything done in good faith in the exercise of his profession as such by a medical or veterinary practitioner. Besides, the State Government may also declare that all or any of the provisions of this Act will not apply to any article or class of articles or exempt wholly or partially from the operation of the rules under the Act any person or class of persons in respect of any poison.

4.1.4. **The Dangerous Drugs Act, 1930.**—The purpose of this Act was to centralise and vest in the Central Government the control over the operations relating to dangerous drugs and to increase and render uniform penalties for offences relating to such operations. The Act provides that the Central Government may make rules permitting and regulating the cultivation of poppy and the manufacture of opium, the manufacture of manufactured drugs, other than prepared opium, import into and export from the States and the transhipment of dangerous drugs, other than prepared opium. The rules framed under the Act prescribe the form and conditions of licences for cultivation, manufacture, import, export and transhipment of poppy, opium and drugs as the case may be, the authorities by which such licences may be, granted and the fees to be charged. Further, in the case of import, export and transhipment the rules may prescribe the ports or places where any kind of dangerous drug may be imported, exported or transhipped. The State Government has control

over internal traffic in manufactured drugs and coca-leaf and is authorised to make rules permitting (a) the inter-State import and export, the transport, possession and sale of manufactured drugs, other than prepared opium and coca-leaf, and (b) the manufacture of medicinal opium or any preparation containing morphine, diacetylmorphine or cocaine from materials which the maker is legally entitled to possess.*

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*The products "manufactured drugs", "dangerous drugs", coca derivatives, medicinal hemp and opium derivatives referred to above are defined in the Act as under:

(a) The "manufactured drug" includes (i) all coca derivatives, medicinal hemp and opium derivatives and (ii) any other narcotic substance which the Central Government may declare to be "manufactured drug".

(b) The "dangerous drug" includes coca leaf, hemp and opium and all drugs manufactured out of [illegible]

(c) Coca derivative means [illegible]

(i) crude cocaine that is any extract of coca leaf which can be used, directly or indirectly for the manufacture of cocaine

(ii) ecgonine that is laevo-ecgonine having the chemical formula $C_9H_{15}NO_3,H_2O$, and all the derivatives of laevo-ecgonine from which it can be recovered,

(iii) cocaine that is methyl benzoyl laevo-ecgonine having the chemical formula $C_{17}H_{21}NO_4$ and its salts and

(iv) all preparations, officinal and non-officinal containing more than 0.1 per cent of cocaine,

(d) Medicinal hemp means any extract or tincture of hemp, and

(e) opium derivative means

(i) Medicinal opium that is opium which has undergone the processes necessary to adapt it for medicinal use in accordance with the requirements of the British Pharmacopoeia whether in powder form or granulated or otherwise mixed with neutral materials,

(ii) Prepared opium that is any product of opium obtained by any series of preparations designed to transform opium into an extract suitable for smoking and the dross or other residue remaining after opium is smoked,

(iii) morphine that is, the principal alkaloid of opium having the chemical formula $C_{17}H_{19}NO_3$ and its salts,

(iv) diacetylmorphine that is the alkaloid also known as diamorphine or heroin, having the chemical formula $C_{21}H_{23}NO_5$ and its salts, and

(v) all preparations officinal and non-officinal, containing more than 0.2 per cent of morphine, or containing any diacetylmorphine,

The punishment for contravention of the provisions of the Act is imprisonment which may extend to two years or fine, or both. As in the Opium Act there is a provision in the Dangerous Drugs Act also empowering any officer of the department of Excise, Police, Customs, Salt, Opium or Revenue, superior in rank to a peon or constable to enter into any building or place, seize drugs and all materials used in the manufacture thereof which is liable to confiscation and detain, search and arrest any person whom he has reason to believe to be guilty of an offence under the Act. But, for acting without reasonable grounds or acting vexatiously and unnecessarily the officer is liable to be punished with a fine which may extend to Rs. 500/-.

4.1.5. The Chopra Committee to which reference has been made in detail in Chapter 5 submitted its report in 1930 and the drafting of a bill based on the recommendations of that Committee was started some time later. In the meanwhile as a result of the enactment of the Government of India Act 1935, the subject "drugs" became a provincial responsibility and the Centre was reponsible only for imports. Consequently a Drug Import Bill was placed for consideration before the Central Assembly in 1939. It did not find favour since almost all the States advocated the enactment of a uniform and a comprehensive law and in 1940 the Indian Drugs Bill was introduced in the Central Legislature and it was passed in the same year as the Drugs Act. The implementation of the Act, was however delayed. The main features of the Drugs and Cosmetics Act now amended, so far as State Governments are concerned, are control, manufacture, sale and distribution of drugs by the establishment of an adequate machinery consisting of licensing authorities, inspectors and Government analysts, establishment of State drug control laboratories and the framing of rules in consultation with the Drugs Technical Advisory Committee. So far as the Central Government is concerned, its responsibility is the control of standards of imported drugs and to make rules in consultation with the Drugs Technical Advisory Committee for regulating imports. In addition, the Central Government has to establish adequate machinery for administration as well as to set up a Central Drugs Laboratory. Two statutory bodies, namely the Drus Technical Advisory Body and the Drugs Consultative Committee were also required to be set up. The Drugs Technical Advisory Body was set up in 1942 and the Drugs Consultative Comittee in 1948. The rules under the Drugs Act were framed in 1946 and the Act as well as the rules thereunder were brought into force in 1947. The Act lays down minimum standares to be complied by the

locally manufactured drugs as well as for imported drugs; their stocking, distribution and sale. While the Drugs Controller, Government of India, assisted by the Assistant Controllers at the ports exercises powers under the Act and Rules with regard to imported drugs, the State Drugs Controllers are given the powers of enforcement with regard to indigenous drugs. Any unit intending to manufacture drugs is required to obtain a manufacturing licence from the Drugs Controller of the State in which the factory is located. Before the licence is issued, the Drug Controller has to satisfy himself after due inspection of the premises under the provisions of the Act regarding hygienic conditions, equipments, qualified personnel and other requisite facilities available to the manufacturer. The State Drugs Controllers have also powers for periodical inspection of the premises, and testing of the products with the manufacturers, stockists, wholesalers or retailers to see that they conform to the prescribed minimum standards of quality. Every firm has to provide arrangements for testing or analysis either in its own laboratory or in other institution approved by the licensing authority to carry out such tests on behalf of the firm. The firms are required to test and analyse every batch of every drug or preparation manufactured by them. According to an amendment made in 1960 the Central Government assumed concurrent powers to appoint Inspectors, Analysts and to exercise powers of such officers as prescribed under the Act. The inspectors of drugs have to collect samples from the manufacturing premises as well as from the market to make an assessment in respect of quality of the product manufactured. Powers of penal action of prosecution or cancellation or suspension of licenses are vested in the State Drugs Controllers for the purpose.

4.1.6 There are provisions in the Act for proper packing, labelling, printing of manufacturing licence, date of manufacture of batch, date of expiry, date of potency of various medicines on the bottles and cartons etc. Certain specified medicines can be sold by retailers only under proper prescriptions from registered medical practitioners or hospital authorities.

4.1.7 **The Pharmacy Act** was passed in 1948 to regulate the profession of pharmacy. The Act provides that the Central Government shall constitute the Central Council, a body corporate by the name of the Pharmacy Council of India for regulating the education and training of pharmacists in India. The Central Council is authorised, subject to the approval of the Central Government, to make regulations called the Educational Regulations prescribing the minimum educational qualifications as a pharmacist. The Educational Regulations may prescribe

(a) the nature and period of study and of practical training to be undertaken before admission to an examination ; (b) the equipment and facilities to be provided for students, and (c) subjects and standards of examination. Any authority in a State which conducts a course of study for pharmacists or holds an examination in pharmacy may apply to the Central Council for approval of the course or examination and the Central Council shall give its approval after making such inquiries as it thinks fit.

4.1.8. At the State level, the Act provides that the State Government shall constitute an individual State Pharmacy Council, or two or more State Governments may enter into an agreement to provide (a) for the constitution of a joint State Council for all the participating States, or (b) that the State Council of one State shall serve the needs of the other participating States. After its constitution the State Council has to maintain the Register of Pharmacists which shall include the full name and address of the registered person, the date of his first admission to the Register, his qualifications for registration, his professional address, etc. A person who (a) holds a degree or diploma in pharmacy or pharmaceutical chemistry or a chemist or druggist who (b) holds a degree of an Indian University in a subject other than pharmacy or pharmaceutical chemistry and has been engaged in the compounding of drugs in a hospital or dispensary for a total period of not less than three years, or (c) has passed the recognised examination for compounders and dispensers, or (d) has been engaged in the compounding of drugs in a hospital or dispensary or other place for a total period of not less than five years, is entitled to have his name entered in the first register on payment of the prescribed fee. The name of the registered pharmacist is liable to be removed from the Register, if (i) his name has been entered in the Register by error or on account of mis-representation or supression of a material fact, or (ii) he has been convicted of any offence or has been guilty of any infamous conduct in any professional respect, or (iii) the person employed by him for his business of pharmacy has been convicted of any such offence, or has been found guilty of any such infamous conduct. The penalty for falsely claiming to be a registered pharmacist is a fine extending to Rs. 500/- on first conviction and a term of imprisonment extending to six months or a fine not exceeding Rs. 1000/- or both, on any subsequent convictions.

4.1.9. **The Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954.** provides for the control of advertisement of drugs in certain cases, *to prohibit the advertisement* for certain purpose, of remedies alleged to possess magic qualities

and to provide for matters connected therewith. The word 'drug' referred to in the Act includes (i) a medicine for the internal or external use of human beings or animals, (ii) any substance intended for use in the diagnosis, cure, mitigation, treatment or prevention of diseases in human beings or animals, (iii) article, other than food, intended to affect or influence in any way the structure or any organic function of the body of human beings or animals.

4.1.10 The Act prohibits the publication of (i) any advertisement of drugs for the treatment of specified diseases or disorders, (ii) advertisement containing any matter which (a) directly or indirectly gives a false impression regarding the true character of the drug, or (b) makes a false claim for the drug or (c) is otherwise false or misleading in any material particular, as well as (iii) advertisement of magic remedies for the treatment of specified diseases or disorders. The Act also prohibits the import into and export from India of any document containing prohibited advertisement of the nature mentioned above. The State Government may authorise the seizure and detention of any document, article or thing which contravenes any of the provisions of the Act. The penalty for an offence under the Act is imprisonment upto six months or fine or both, on first conviction and imprisonment extending to one year or fine or both, on a subsequent conviction.

4.1.11 **The Medicinal and Toilet Preparations Excise Duties) Act, 1955** designed to regulate the manufacture and sale of drugs is essentially fiscal in character. However since it relates to medicinal and toilet preparations, a brief account of the provisions of this Act is given below —

The Act provides for the levy and collection of excise duties on medicinal and toilet preparations containing alcohol, opium, Indian hemp and other narcotic drugs or narcotic.

Excise duties are leviable at specified rates on dutiable goods manufactured in India. The Central Government may notify that no person shall engage in the production or manufacture of any dutiable goods or their parts or ingredients or specified containers or labels of such containers except under the authority of a licence granted under the Act. Any person who contravenes any of the provisions of the Act, or evades the payment of excise duty, or fails to supply any information which he is required to supply under the rules or commits or abets the commission of any offence mentioned above is punishable with imprisonment upto six months or with fine upto rupees two thousand, or with both.

Any Excise Officer duly empowered may arrest any person who is accused or is reasonably suspected of committing an offence under the Act, summon any person to give evidence or produce a document or any other thing in an inquiry which the officer is making under the Act. But if the officer exercises his powers without reasonable grounds or vexatiously and unnecessarily he will be punishable with fine which may extend to rupees two thousand.

Every owner or occupier of land as well as his agents, if dutiable goods are manufactured on his land in contravention of the provisions of the Act in question or the rules made thereunder, has to report the manufacture of contraband dutiable goods, to a magistrate or to an officer of Excise, Customs, Police or Land Revenue Department immediately the fact comes to his notice. For wilfully conniving at any offence under this Act, the owner or occupier of the land or his Agent, as the case may be, will be punishable with imprisonment upto six months or with fine upto rupees five hundred or with both. Further, any person wilfully or maliciously giving false information and so causing an arrest or a search to be made will be punishable with imprisonment which may extend to two years or with fine which may extend to rupees two thousand or with both.

4.1.12. One of the terms of reference to the Drugs and Equipment Standards Committee constituted in 1962 was to examine the existing legislation on drugs and to suggest ways and means to bring about consolidation of the legislation and its uniform enforcement.

The Committee recommended the consolidation of the Opium Act and the Dangerous Drugs Act and also that of the Drugs and Magical Remedies (Objectionable Advertisement) Act and Poisons Act of 1919 along with the Drugs and Cosmetics Act. Further details of the recommendations made by this committee are contained in paragraph 5.3.2.

## 4.2. Price control order :

4.2.1. The first control order in respect of prices of durgs was promulgated in 1962 when, after the Chinese aggression, the Government of India issued, under the Defence of India Rules, the Drugs (Display of Prices) Order, 1962 requiring the manufacturers, importers and distributors of drugs to publish price lists of their products and the dealers to display such price lists in their premises. This was followed by the Drugs (Control of Prices)

Order, 1963 which pegged the selling prices of drugs at the levels obtaining on 1st April, 1963 Consequently, the manufacturers, distributors and dealers could not increase the prices of drugs without the prior approval of Government Subsequently, when Government decided to restrict the application of the Defence of India Act and Rules only to certain specific purposes, the prices of drugs came to be controlled under the provisions of the Essential Commodities Act, and the Drugs Prices (Display and Control) Order, 1966 was issued on 30th January 1966 This consolidated Order went beyond the provisions of the two separate Orders which it replaced The additional provisions in the new Order were the steps taken to plug loopholes in the earlier Orders It sought to maintain the existing wholesale prices and required the manufacturers to obtain Government approval in respect of prices of new drugs The selling prices of drugs sold in loose form came to be regulated Besides the manufacturers were required to stamp the retail selling prices on the containers of drugs

4 2 2 Various representations were made to Government by the industry and trade regarding the stamping of retail prices After examining them, Government decided to amend the Order and issued an amendment on 19th September 1966 under which only the words, "Retail Price not to exceed" were required to be stamped on the containers of drugs The amendment amplified the definition of wholesale price which now included Central excise duties but excluded local taxes The second amendment which was notified on 2nd January 1967 substituted "inspector" appearing in the old Order by "officer of the Central Government or State Government authorised by that Government in this behalf" The next amendment, the third in the series, was issued on 29th September 1967 which introduced two important changes The first change related to the prescription of a form for furnishing particulars of cost of production which has to accompany every application for approval of drug prices The second change was a relaxation of the provisions regarding new drugs which could now be marketed after supplying relevant particulars to the Central Government in the prescribed form The Government, however, reserved powers to refuse approval of price within a period of four months It was hoped that these changes might result in expeditious disposal of applications for approval of drug prices and enable the community to derive benefits of new drugs

4 2 3 At the ninth Drugs Conference convened by the Ministry of Health in August 1965, the manufacturers and the trade severely criticised the price control order which froze the selling

prices of finished drugs. Their main complaint was that there was no such control on the prices of raw materials. They constituted a Drug Advisory Committee with the following terms of reference :—

(i) Determination of the price structure of drugs from the cost of manufacture stage to the point at which drugs are sold to consumers.

(ii) Levels at which the price should be fixed and the margin of profit at each level.

(iii) Procedure to be followed for adjustment of cost of manufacture because of increase in the price of raw materials and for other reasons and to give an interim relief.

(iv) Fair trade practice; statutory or other measures to enforce them.

(v) Examination of the reasonableness or otherwise of the cost of manufacture and recommendation for the set up of a machinery for the same.

4.2.4. The Committee submitted an interim report to the Government of India on 27th April, 1966 making the following recommendations :—

(i) As the pharmaceutical industry has been compelled to hold prices of drugs as were prevailing in April 1953, the authorities should evolve a plan to supply imported and indigenous raw materials, packing materials, etc. to the actual manufacturers in quantities actually required by them and at a price prevailing in April 1963.

**Failing which :—**

(ii) The Drugs (Control of Prices) Order, 1963 should be repealed immediately. Prices of essential and life-saving drugs may be controlled, if the Government feels so.

(iii) Small scale manufacturers should be granted an immediate interim increase of 10% on the prices of essential and life-saving drugs.

(iv) In case other manufacturers and small-scale manufacturers require price increase on essential drugs (about 10% interim increase) they shall have to make out a case as detailed in the proforma finalised by the Committee and submit the same to the authorities through the Committee.

(v) The decision as to the application for price increase should be communicated to the applicant within three months from the date of receipt of the application by the authorities, with a copy to the convenor of the Committee.

(vi) The authorities should evolve a plan for the import of raw materials and for the distribution of the imported and indigenous raw materials to the actual manufacturers as otherwise the difficulty of availability of the drugs in the market is likely to continue and may ultimately lead to extreme drug shortage, and thereby the ailing public may suffer considerably.

Government subsequently advised the Drugs Advisory Committee that it need not submit any more reports as the matter had been referred to the Tariff Commission.

4.2.5 The manufacturers of drugs expressed strong views against the price control order both in their memoranda to the Commission as well as at the public inquiry. Their main arguments are briefly set out below:—

(i) While there is price control on formulations only, basic drugs and other raw materials, chemicals and intermediates which go into the production of formulations are free of such regulations. Since the prices of these materials have been steadily rising, it is very difficult for the formulators to absorb those increases in the present selling prices of formulations, unless the prices of basic drugs and other raw materials also are pegged by Government. Many life saving drugs are not being manufactured since such operations have been rendered uneconomic. Owing to the price freeze there is reluctance on the part of producers to introduce new drugs. The number of new drugs introduced in 1963-64 was 69 but it fell down to 22 in 1967.

(ii) While the Government insist on the pharmaceutical industry to hold the prices at the level prevailing on 1st April, 1963 this principle has not been enforced on the drugs manufactured and sold by Government owned factories and the example of quinine sulphate has been cited for which the price is said to have gone up from Rs. 89 to Rs. 200 between 1963 and 1966. The index of wholesale prices for the whole country went up from

127.4 in 1963 to 216 in 1967. The drugs and medicines component of this index was 104.2 in 1963. As a result of the increase in prices of quinine sulphate the average index for the year 1967 went up to 124.4. Thus, while the wholesale prices have risen by 70 per cent since 1963 the index for drugs and medicines has gone up by about 20 per cent and this too due to substantial increase by Government in the prices of quinine sulphate. It has also been contended that the prices of finished products cannot be controlled unless prices of services, raw materials and other supplies are controlled too. The control is said to be irrational since it is not based on any scientific study of the costs and price structure of the industry or of the reasonableness or otherwise of the prices prevailing at the time control was introduced.

(iii) No new formulation can be marketed unless its price is approved by Government. In view of the considerable delay in the disposal of applicatons for price approval there is no incentive for the industry to introduce new medicines.

(iv) Although there is provision to consider applications for price increase, there are no norms for deciding what are fair prices nor has any adequate machinery been set up for this purpose. The issues are therefore left to be settled by bargaining and intermittent negotiations. Forms and procedures prescribed for obtaining price approval of new drugs are often changed and at every change the producing units are asked to re-submit their applications which were already pending with Government, unnecessarily delaying the approval of prices. There were instances of applications made in 1962 or 1963 which received approval in 1967. It has been represented that there is a great deal of red tape involved in the matter of drugs prices.

(v) There have been very few price reductions after the introduction of price control, while such reductions were a continuing feature before the advent of the control. The pharmaceutical industry being highly competitive in nature, free interplay of competitive forces is essential for its development but the price control, according to O.P.P.I., only distorts this basic nature of the industry.

(vi) It is meaningless to examine price structure of the particular drugs instead of the entire company It is a well established principle that in the totality of the range of a company's products certain lines yielding higher profit margins than others Therefore well established product group with a large turn-over should be called upon to bear a part of the lesser profit margins of the new products

As we have not gone into the question of price control, it is not necessary for us to examine the various arguments put forward by O P P I

4 2 6 The Federation of Associations of Small Scale Industries in India has represented that large scale units were in a position to sell their products at the prices originally stabilised at the level of April 1963 despite the increase in cost and prices of raw materials etc. Owing to high margins of profit which were already included in their price structure On the other hand the small scale units because of the low margin of profit within which they operated were unable to absorb any rise in the cost of raw materials in the price structure of their products The Federation has also represented that the procedure to obtain increases in selling prices of drugs is very cumbersome It has therefore suggested that request for price increases should be dealt with expeditiously by the State Drugs Controllers The Federation has further pleaded that suitable increases should be allowed in the selling prices of small scale units which have been pegged for the last four years

4 2 7 The industry has represented that in the case of a new drug a licence has to be taken from Drugs Controller which takes not less than three months After clinical trials have shown satisfactory results, an application has to be made to the Director General of Technical Development for a licence to manfacture the product and to the Drugs Controller for permission to market it Futher trials are undertaken by the Drugs Controller which may take from six to 24 months Then only can manufacture start This sometimes takes anything upto three years At the public enquiry also complaints were made with regard to the delay in the registration of new drugs The Drugs Controller of the Government of India explained the reasons for the dealy in the registration of new drugs He has observed that barring a few countries like the U S A and France, other countries do not have any stringent legislation for screening new drugs, particularly with reference to their safety and efficacy It will not therefore be advisable to allow the commercial use of such new drugs in

this country simply because they are being marketed in other countries. Although new drugs might have been clinically tried in foreign countries and scientific publications about their clinical efficacy and safety may be available, there is definitely a need for insisting upon their clinical trials in India also for various reasons. First, the physiological norms of the people in this country are different from those of the people in the foreign countries and the dosage of new drugs here may require adjustments depending upon the therapeutic effects of those drugs as evinced during the clinical trials. Secondly, a majority of the people in India being victims of diseases, like malaria and dysentry their liver and spleen are already impaired. Since most of the drugs get metabolised through liver, spleen, etc., care should be taken to ensure that new drugs which may not have produced any undesirable side-effects in the foreign countries do not produce any side reactions in this country also. Thirdly, owing to the low level of nutrition amongst the people in India the impact of potent drugs is likely to be different on patients in this country. Lastly, diet, general habits and even racial strain influence the therapeutic activity of drugs. Even in the same country the same drugs may produce different reactions amongst different groups of people with different dietary and other habits. For these reasons the Drugs Controller considers it essential to insist upon the clinical trials of new drugs in India also before permitting their commercial use.

4.2.8. As regards the time taken for clinical trials the Drugs Controller has stated that it would depend upon the nature of the drugs which are sought to be cleared. The drugs which have to be used on a long term basis, like anti-hypertensive drugs and anti-diabetic drugs will necessarily have to be tried for a long period while those used in the treatment of cancer and anti-infective drugs which are taken by patients for short periods do not require to be tried over long periods. In any case, even though a new drug is under trial in this country and has not been cleared, its use by individual doctors and medical institutions is not precluded as such drugs are allowed to be imported for treatment of patients on the responsibility of the attending physician.

4.2.9. **Difficulties in the implementation of the Control Order.**—The Director, Drugs Control Administration, Maharashtra has brought to our notice the following difficulties in the effective implementation of the new Order :—

(i) In view of the definition of retail price, the manufacturer, distributor or importer, as the case may be, will have to print new price-lists effective from 1st July

1966. These lists when published will have to scrutinised to ensure that the new retail price has been enhanced *only on account of the imposition of the* excise duty. Due to the large number of manufacturers in the State of Maharashtra and the wide variety of drugs manufactured and marketed by them, the scrutiny of lists would involve tremendous work in the initial stages.

(ii) Sub-clause 2 of Clause 3 makes it obligatory for every dealer to furnish a price list each time the drug is sold to a retailer. Thus, even if a retailer purchases drugs from different wholesalers at an interval of a month or so, each wholesaler has to supply fresh price lists every time. This would require a large number of price lists to be printed by the manufacturers for distribution. Moreover, the manufacturers are also required to publish fresh price lists whenever there is a change in the excise duty.

(iii) Clause 6 requ[illegible] that no manufacturer shall introduce for sale or include in his price list any new drug without the prior approval of the Central Government. No guiding principles have been laid down for considering approval of prices of new drugs. The Government of India instructions are that cases for price increases should be routed through State Government. It takes at least 6 months before a manufacturer is able to market a new drug or an old drug with the revised price.

(iv) The importer who imports the drugs which are ready for treatment has to print the retail prices on the labels/cartons which are normally enclosed in a carbon pack and these are packed inbulk in cardboard boxes. For this purpose the importer has to open the original pack *for printing the retail price and re-dress it.* This operation brings the importer within the purview of the Drugs and Cosmetics Act as, in terms of the definition of 'Manufacture' under Section 3(f) of the act, it amounts to packing and finishing for which a manufacturing [illegible]
The importer [illegible]
conditions of [illegible]
the Drugs and Cosmetics Rules.

(v) Clause 8 of the Order which deals with the sale of drugs in loose requires the dealer to charge pro-rata on the

basis of the retail prices of the largest packing. W in the city of Bombay and the suburbs the provis of this order are being somewhat complied with, inquiries made by the Drugs Controller reveal that five Districts of the State, it has not been possible for small dealers in the mofussil areas to comply with provisions of Clause 8 as they order only small packin and retail the drug only from them. Therefore, the pr vision of this Clause is causing considerable hardshi The Drugs Controller has suggested that Clause 8 shoul be suitably amended enabling the dealer t charge pro-rata on the basis of the pack opened withou charging any special rate as "dispensing charges".

4.2.10 The Director, Drugs Control Administration, Maharashtra, has also pointed out a loophole in the existing Control Order in that there is no control on the wholesale prices charged by wholesaler to wholesaler or wholesaler to retailer. Under the existing pattern of trade in drugs, mofussil dealers buy from wholesalers in town who in turn obtain their supplies from other wholesalers. We suggest that these matters may be considered and suitable modifications introduced.

4.2.11 **Price Control in Foreign Countries.**—A delegation sponsored by the Development Council for Drugs and Pharmaceuticals consisting of a team of technical experts drawn from the industry and Government visited major drugs manufacturing units and their research laboratories in six important drugs producing countries of the world, *viz.*, Italy, Switzerland, West Germany, U.K., U.S.A. and Japan towards the end of 1963. The delegation studied the development of the drugs industry in those countries and submitted a comprehensive report on the various aspects of the industry in the foreign countries and made certain recommendations for adoption in India.

4.2.12 According to the delegation, there is no official machinery for the control of consumer prices of drugs in Switzerland, West Germany, U.S.A. and Japan. Nevertheless, there xists in effect an efficient price control due to intense internal ompetition and the application of the universal law of supply nd demand. In the other two countries, that is, Italy and U.K. rice control systems have been evolved, the salient features of hich are outlined below.

4.2.13 **Price control in Italy.**—As a matter of principle, sale price to the public is to be fixed by the manufacturing

firm according to established rules The principles of price fixation is based on cost of raw materials *plus* cost of packing materials *plus* manufacturing expenses (direct and indirect) The total cost thus computed is multiplied by 3 (by 3 5 in the case of firms having a research laboratory actually working) to arrive at the selling price to the public Of this price, the wholesale dealer is granted by law a discount of 35 75 per cent and out of this discount the retail chemist gets 28 80 per cent Regulation of prices is controlled by the Price Commission

4 2 14 **Price Control in the U K.**—There is a system of voluntary price control evolved in the U K over a period of years According to the report of the delegation the Ministry of Health in U K commenced with a meticulous examination of costs of 100 products and ultimately came down to two, the prices of which had to be fixed by negotiation The voluntary price regulation scheme is stated to have been arrived at after realising the impossibility of such price examination Besides the voluntary price regulation scheme, there is a legislation in force relating to "re-sale price maintenance" The object of this legislation is to prevent the unhealthy practice of under-cutting of prices of drugs for retail sale

4 2 15 Most of the products of the Pharmaceutical Industry are sold to the Government for the National Health Services and a state of virtual monopony prevails in the country since the N H S is the largest single buyer and is in a position to negotiate on favourable terms

4 2 16 The important facets of the scheme of price fixation are given below The scheme operates only after the first three years of use of a new drug during which preparations may be priced at the manufacturers' discretion so that some of the research costs may be recouped When the three years are up, a satisfactory price has to be determined under Part A of the Scheme in accordance with one of the three following criteria —

(i) *Export price criterion* —Under this criterion if the exports of drugs are adequate (not less than 20 per cent by volume of total sales) the export prices are taken to provide a market price The price charged to the wholesalers must not exceed the weighted average of prices charged in the six largest export markets

(ii) *The unbranded Stardard equipment criterion* —This criterion is to be adopted if criterion (i) cannot be applied It is applicable if the formula of a proprietary preparation

is identical with that of a standard product (*i.e.* one appearing in the B.P., B.P.C. or (B.N.F.). But in practice there are few products of the industry where such equivalents exist. The price to the chemist of the proprietary preparation must not exceed that of the unbranded equivalent.

(iii) *The trade price formula.*—This criterion has to be applied when the first two criteria are inapplicable. Under this criterion, the manufacturer has to declare the formula of the preparation, cost of the ingredients in accordance with the Drug Tariff prices and a schedule of ingredients' prices agreed between the industry and the Ministry, add an agreed allowance for processing and packing according to another schedule, and finally add a provision for the wholesalers' discount. The final price must not exceed the price paid by the chemist.

4.2.17 Part B of the scheme provides that if none of the criteria in Part A is applicable, a satisfactory price is to be negotiated directly with the Ministry at the option of either the manufacturer or the Ministry. The basis of the voluntary price regulation scheme being maintenance of a healthy balance between the interests of the industry and the interests of the consumer, the emphasis is on price fixation by negotiation. For a vast majority of the products the prices are, according to the Delegation, ultimately fixed by negotiation.

4.2.18 **Price maintenance law.**—Prior to 1957 the Proprietary Articles Trade Association of U.K. used to maintain a control over under-cutting of prices by its member firms. This voluntary action seemed to work satisfactorily without any legal sanction from Government. However, the Restrictive Trade Practices Act, 1956 annulled all restrictive trade agreements At the moment, the legal methods of enforcing resale prices are (a) under the common law by commercial contract; (b) through the relevant provisions of the Restrictive Trade Practices Act; and (c) in the case of patented articles by court action for infringement of patents.

**4.3 Drugs Control Administration in India :**

4.3.1 The regulation of manufacture, sale and distribution of the drugs is the concern of the State Governments, on the other hand laying down of standards of drugs, control over quality of imported drugs, and coordination of the activities of the State overnments and providing expert advice are the functions of the

Central Government The organisation at the Centre consists of the Drugs Controller who is assisted by a Deputy Drugs Controller and two Assistant Drug Controllers at the head-quarters There is an Assistant Drugs Controller in each of the three ports at Bombay, Calcutta and Madras and a Technical Officer at the port of Cochin There four zonal offices in Bombay, Calcutta, Madras and Ghaziabad assist the State Drugs Control Administration in the uniform enforcement of the Drugs and Cosmetics Act and other connected legislation on an all India basis The posts at Bombay and Calcutta are held by Deputy Drugs Controllers and those at Madras and Ghaziabad by Assistant Drugs Controllers The main functions of the Central Organisation with the Drugs Controller at the head are (i) sampling of drugs from imported consignments and testing them at the Central Drugs Laboratory, Calcutta or in the Central Research Institute at Kasauli (for biological products) Import is permitted only if the products are found to be of a certain standard quality Drugs which are found not up to the standard quality are either returned to the country of origin or destroyed at the option of the importer, (ii) in the case of drugs falling under biological and special products which are likely to deteriorate on storage the Central Drug Control Officers at the ports inspect the premises where such drugs are stored and draw samples for test If the test reports indicate that the drug has deteriorated the specific batch numbers are withdrawn from circulation and the State Drug Control authorities are informed of the position, (iii) issue of licences for the import of small quantities of drugs for personal use and (iv) enforcement of the provisions of the Drugs and Magical Remedies (Objectionable Advertisement) Act in so far as the import and export of drugs through the respective ports are concerned

4 3 2 One of the statutory functions of the Drugs Controller is to grant licences for import of biological and other special products, detailed under Schedule 'C' and 'C(1)' of the Drugs and Cosmetics Act It has been estimated that about 200 import licences are issued or renewed every year References are made to the Assistant Drugs Controller with regard to the availability of adequate storage accommodation for storing drugs proposed to be imported and licences are usually granted only after receipt of these clearances

4 3 3 Unless approved by the Drugs Controller no new drugs can be imported The importer has to apply to the Drugs Controller for permission forwarding documentary and other evidence containing particulars of the pharmacological and toxicity studies carried out with the drug, report of the clinical trials

already published and particulrars of tests etc. The information supplied is examined by the Drugs Control Organisation and where necessary expert opinion from bodies such as the Indian Council of Medical Research, New Delhi, All India Institute of Medical Sciences, New Delhi, the School of Tropical Medicine, Calcutta, Tata Cancer Hospital, Bombay, All India Institute of Mental Health, Bangalore, and also Medical Colleges is obtained. In most cases the Drugs Controller requires further clinical trials to be carried out with the new drugs. In some cases expert verification of the data submitted by the applicant is carried out in selected institutions. Under the provisions of the rule 30(A) a continuous watch has to be maintained on the use of new drugs subsequent to the grant of permission in order to discover whether or not in the case of extended use any toxicity or side reactions are observed. The Drugs Controller has to maintain liaison with leading hospitals and medical institutions for eliciting information regarding the adverse reaction or any other information that may be useful in the re-assessment of the efficacy of the drug. On an average about 60 applications for import of new drugs are received every year. The Drugs Controller is also the approving authority for the manufacture of new drugs in the country. The procedure for securing approval for manufacture of new drugs is similar to that for the import of new drugs, except that in the case oi manufacture of such drugs the application has to be routed through the State Drugs Control authorities. The manufacture of other drugs, however, does not need the approval of the Drugs Controller. With the help of the port organisation the Central Drugs Controller maintains statistics regarding the total value of the drugs imported into the country as well as information about the quantity of imports. Data in respect of the total quantity of narcotic drugs imported together with particulars of the distribution amongst such manufacturers in the country is also maintained by the Central Drugs Control Organisation.

4.3.4 The licensing of the manufacture of drugs in the country and the sale of all drugs whether manufactured in the country or abroad is the responsibility of the State Drugs Controllers. The manufacturing activity in the different States is uneven. For quality control and inspection only a few State Drugs Control Administrations have elaborate and adequate administrative machinery. Other States do not appear to have adequate machinery for inspection, detection of spurious drugs etc. In many States there is no whole-time Drugs Controller but the powers under the Act are vested in an officer as a subsidiary assignment. The organisation is sometimes insufficient to implement the provisions of the Act. As a result of such disparities the

standards of enforcement as well as regulation are bound to differ. Were the drugs manufactured in a particular State to be utilised in that State alone, it could be argued, that the machinery of the State should be depended upon to ensure the safety and protection of those who were going to make use of the drug. But it so happens that the licence granted in one State become automatically valid in so far as the product is concerned for all other States in the country, irrespective of the fact whether or not the product passes the more stringent tests that may be applied in a State other than the State of manufacture. This problem inevitably leads to the consideration as to whether or not there should be uniformity in the standards for testing, facilities for the same, as well in the regulation and enforcement of the provisions of the Act and Rules in so far as they relate to manufacturing activity. As things are, there seems to be a direct relationship between the extent of the manufacturing activity and the nature and degree of control exercised by the State authorities. This should not be so. It was suggested to us at the public inquiry that Government of India should take steps to bring the control of drugs under the Centre by getting the consent of all the States to transfer the subject to the Centre so that there would be proper and healthy enforcement of the provisions of the Drugs Control Act throughout the country. It is also understood that States are generally not inclined to give up their jurisdiction and control in this matter. The alternative is that a uniform policy for enforcement of the Act must be adopted by all the States in this vital matter. The Reports of (1) The Drugs and Equipment Standards Committee (1965), (2) The Mukhopadhyaya Committee (1966), (3) The West Bengal Drugs Enquiry Commission (1965), and (4) The Committee on Drug Control (1964) have all made valuable suggestions for bringing about uniformity as well as more effective enforcement of the provisions of the Drugs Control Act.

4.3.5 If uniform standards have to be enforced there ought to be centralised control rather than decentralisation of licensing and control as exists today. It is patent that in the case of a number of States Drug Control is a nominal activity and such manufacturing activities may be countenanced as would not pass muster in another State more experienced in these matters and having a better organisation. There ought to be uniformity of standards of administration, testing, approval and other matters regulating manufacture of drugs and we recommend that policies may be devised and implemented in such a way that the present disparity in these standards is removed.

# CHAPTER 5

## PREVIOUS INQUIRIES

### 5.1 Pre-Independence period (1927-1947) :

5.1.1. Though the need for legislation to control the quality of drugs sold to the public was expressed as early as 1927 by the Council of States through a Resolution, it was not till 1930 that the Central Government, in response to continuing public opinion on the subject, appointed the Drugs Enquiry Committee under the Chairmanship of Colonel R. N. Chopra. This Committee, known as Chopra Committee, was asked to enquire into the extent to which impure and defective drugs were being imported, manufactured or sold in the country, and to recommend measures to control such imports, manufacture or sale. The Chopra Committee Report was submitted to Government in the same year 1930 *and its important recommendations were : (1) Central* legislation to control drugs and pharmacy, (2) establishment of test laboratories in all States for the purpose of controlling the quality of indigenous production and of a Central Laboratory to control the quality of imported drugs and also to act as an expert body in disputes between States arising from their analysis of samples, (3) prescription of minimum qualifications and setting up training courses for the pharmacists and (4) compulsory registration of all patent and proprietary medicines of undisclosed formula whether imported or manufactured in the country. It was also to recommend that an advisory Board should be appointed to adivse the Government in respect of the Rules to be framed for the Central Act recommended.

5.1.2 It was 10 years after the Chopra Committee submitted its Report that the Drugs and Cosmetics Act was enacted in 1940 to regulate the import, manufacture, distribution and sale of drugs and pharmaceuticals in the country. The Rules to implement the provisions of the Act took another five years to frame and the Act and the Rules came into force only in 1947. The public demand for quality control on drugs sold first made in 1927, took twenty years to be fulfilled by legislative enactment and its enforcement.

5.1.3 The Drugs and Cosmetics Act, 1940, and Rules, 1945 though based on the Chopra Committee Report, did not meet

that Committee's recommendations regarding pharmacists who handle drugs and formulations. Even before Independence, the Bhore Committee (1943) officially known as the Health Survey and Development Committee, emphasised the need for a thorough overhaul of the profession of pharmacy in the country and recommended measures for registration of pharmacists and for their training and improvement. The recommendation for the improvement of pharmacy in the country made by the Chopra Committee in 1930 and the Bhore Committee in 1943 were implemented only after Independence when the Government of India passed the Pharmacy Act in 1948.

5.1.4 *Before Independence* the public demand and the consequent Governmental interest were concerned mainly with the control of quality of drugs sold to the public. It was only in 1945, after World War II, that the Government's interest was aroused in regard to domestic production of new drugs and fine chemicals. In 1945, the Government of India in the Department of Planning and Development set up a *Panel on Fine Chemicals, Drugs and Pharmaceuticals* under the chairmanship of Colonel R. N. Chopra to enquire into and indicate to the Government the drugs to be produced within the next five years and the necessary steps to be taken for the same. This panel recommended the undertaking of domestic manufacture of antibiotics like Penicillin and Streptomycine, antimalarials, and synthetic and sulpha drugs. The Panel recommended Governmental assistance to the indigenous drug industry, especially in setting up pilot plants for the manufacture of new drugs, and also measures for training the technical personnel required to man the industry.

**5.2 Post-Independence period (1947-1962) :**

5.2.1 After Independence, the Government of India enforced the Drugs and Cosmetics Act (1940) and Drugs and Cosmetics Rules (1945) and the Pharmacy Act, 1948 was enacted. With the enforcement of these Acts and Rules, the control on domestic manufacture of drugs and their sale through qualified personnel became the responsibility of the State Governments, while the Central Government was made responsible for the control on imported drugs. Further, Government had to evince direct interest in the production aspects of the industry as well, and for this purpose set up panels and committees to inquire into the industry at different times.

5.2.2 In 1951, the Government of India set up a panel known as the Panel for Pharmaceutical Industry (a) to review the

industry in the light of the changed conditions brought about by the Partition, Korean war, and other factors, (b) to report, inter alia, on the raw material requirement of the industry and the ways of increasing the production capacity of the industry within a short period and (c) to suggest measures for establishing additional capacity wherever needed. In addition to furnishing to the Government a list of raw materials, the quantities required and their sources, this Panel recommended a change in the import policy of the Government in order to secure expansion of domestic output of drugs. It also recommended State assistance to private sector schemes for manufacturing drugs like P.A.S. and raw materials like Citric Acid.

5.2.3 At the same time, the Planning Commission also examined the pharmaceutical industry while dealing with the chemical industry as a whole. Some of the important recommendations made by the Planning Commission were as follows : (1) the existing as well as the new units should make every effort to manufacture as many pharmaceutical chemicals and drugs as possible using the basic chemicals and or simple intermediates, domestic or imported; and that whenever penultimate drugs and intermediates were used in the first instance to start the industry, efforts should be made to manufacture such products within the country as soon as possible; (2) higher priority should be given to the manufacture of synthetic drugs than to the manufacture of formulations out of imported synthetic drugs; (3) emphasis should be put on quality rather than on volume of production in the case of pharmaceutical industry; (4) steps should be taken to bring down the cost of drugs, and the tendency of the manufacturers to undertake development by associating a number of related companies together, which would only tend to increase the cost of production, should be discouraged.

5.2.4 The domestic pharmaceutical industry was still in a nascent state even after five years of Independence. In 1952, out of the 18 basic drugs specified for the present inquiry only 3 drugs, namely, Tetanus Anti-toxin P.A.S. and I.N.H. were indigenously produced, while capacities were either established or were in the process of establishment for antibiotics like Penicillin, Chloramphenicol and Tetracyclines. In 1953, the Government of India in the Ministry of Commerce and Industry set up the Pharmaceutical Enquiry Committee with Major General S. L. Bhatia as Chairman. The Committee had ten Members drawn from universities and research institutes, State Directorates of Medical Services, industry as well as from the

Ministry of Commerce and Industry and the Ministry of Health. The important terms of reference to the Committee were,

(a) to study the working of the industry with particular reference to the cost of production, efficiency of the process employed, quality of drugs produced, and the demand for the drugs produced and their essentiality, and whether the drugs produced were made from imported intermediates and penultimate or from the basic raw materials,

(b) to study the operations of foreign and/or Indian concerns who import drugs and pack them in the country, and the extent of tie up between wholly or partly owned Indian concerns with foreign companies,

(c) to recommend steps for encouraging the manufacture of important drugs which are currently imported and

(d) to enquire into the scheme of distribution, profit margins, and the part played in this by purely Indian as well as other concerns

5 2 5 The Pharmaceutical Enquiry Committee made a comprehensive survey of the existing drug industry as well as practice of pharmacy in the country, and submitted its report in 1954 Its recommendations were many and far reaching and related to various aspects of the domestic drugs industry The recommendations relating to licensing foreign collaboration, production, imports and exports, customs duties, sales, selling system, prices and margins, quality, research, patents and royalty, and raw materials are summarised in Appendix V-A

## 5 3 After Chinese Aggression in 1962 :

5 3 1 While the various recommendations of the Pharmaceutical Enquiry Committee were being taken into account by Government from time to time, in formulating their schemes [illegible]

standard drug, and reducing the prices of the indigenous pharmaceutical products which compared to those of imported ones were high The Central Government as well as the State Government devoted attention to these problems and Committees and Commissions were set up to inquire into these different issues relating to the industry

5.3.2 *Drugs and Equipment Standard Committee.*— In 1962, the Ministry of Health appointed the Drugs and Equipment Standard Committee headed by the Deputy Minister, Health and with specialist Members drawn from the industry, medical profession and Government depatrments with the following terms of reference :

(a) To assess the extent of spurious and sub-standard drugs in the market;

(b) To suggest minimum standards for drugs and equipment and to examine the possibility of meeting the country's requirements from indigenous sources;

(c) To report on the existing drug control machinery both at the Centre and in the States, the testing facilities available, and adequacy of staff for the control available;

(d) To suggest measures to tighten the provisions of the Drugs and Cosmetics Act, 1940 so as to make its implementation more effective; and

(e) To examine the existing legislations on drugs including related legislations such as the Dangerous Drugs Act, the Poisons Act, the Medicinal and Toilet Preparations (Excise Duties) Act, the Prevention of Food Adulteration Act, and to suggest ways and means to bring about consolidation of the legislation and its uniform enforcement.

The Committee submitted its Report in March 1965 making a number of recommendations on each of the terms of reference. In so far as drugs are concerned its main recommendations are given in Appendix V-B.

5.3.3 **West Bengal Drugs Enquiry Commission.**—In the same year, 1962, under the Commission of Enquiry Act the West Bengal Government appointed a Commission, known as the West Bengal Drugs Enquiry Commission, under the Chairmanship of Shri Biren Mookherji, to inquire into, among other things, adulteration of drugs. This Commission including the Chairman consisted of 10 members, four from medical profession, two office bearers of the Indian Medical Association while the others included the Commissioner of Police and Officers from I.A.S. and I.A. & A.S. Its terms of reference related to (a) the drugs manufacturing companies in West Bengal, procurement of their

raw materials, machinery, etc. adequacy of their financial resources quality, standards and testing of their products and the extent to which the existing taxes, duties and fees adversely affected them, (b) the existing law to control the manufacture, testing, storages, distribution and sale of drugs with particular reference to the State Drugs Control Administration and the State Drugs Testing Laboratories, (c) the malpractice in manufacture, storage, distribution and sale of drugs and whether shortage in supply has in any way encouraged the manufacture of spurious and sub-standard drugs. This Commission submitted its Report in June 1964. Some of its important findings and recommendations are given in Appendix V-C.

5.3.4 **Committee on Drugs Control**—After the West Bengal Drugs Enquiry Commission's Report was submitted, the Central Health Council, which was already concerned at the reported high incidence of sub-standard and spurious drugs in the country, wanted to ascertain what immediate action could be taken to meet the situation as reported by the West Bengal Enquiry Commission. In pursuance of a resolution to this effect passed by Central Health Council at its 11th meeting, the Ministry of Health appointed in October 1965 the Committee on Drugs Control known as Bork Committee consisting of the Drugs Controller of India, and the State Drugs Controllers of Maharashtra and Gujarat. The terms of reference of this Committee were (a) to study the Report of West Bengal Drugs Enquiry Commission and also the conditions of the drugs control administration in different States, and (b) to give recommendations to the Central Health Council on the steps to be taken for the effective enforcement of the provisions of the Drugs and Cosmetic Act. The Committee submitted its Report in May 1966. Some of the important recommendations of the Committee relating to formulation, sale licences, amendments to the Drugs and Cosmetic Act, Drug control administration, production of pharmaceutical equipment and testing in the Central Drug Laboratory were given in Appendix V-D.

5.3.5 **Mukhopadhyay Committee (1966) to study the Recommendations of earlier two Committees**—In July 1966 the Ministry of Health and Family Planning, appointed a Committee with the Health Minister of West Bengal as Chairman and the Drugs Controller of India as Secretary (a) to go into the recommendations made by the Committee on Drug Control and also by the Drugs and Equipment Standards Committee and (b) to make suitable recommendations to Government. The

Report of this Committee was submitted in December 1966. The Committee fully endorsed many of the recommendations of the earlier two committees. In Appendix V-E are given the earlier Committees' recommendations relating to Testing and Drugs Acts as endorsed by this Committee.

5.3.6 While in the wake of Chinese Aggression the Drugs (Display of Prices) Order, 1962 and the Drugs (Control of Prices) Order, 1963, were issued by Government to stabilise the drug prices, Government felt also the need for examination of the manufacturing cost of basic drugs with a view to bringing down wherever possible their unreasonably high prices and thereby to scale down the prices of formulations as well.

(i) *Technical Sub-Committee of the Developmnet Council for Drugs and Pharmaceuticals* (1962-63).—During 1962-63 a technical sub-committee of the Development Council for Drugs & Pharmaceuticals had in its Report examined the costs of indigenous manufacture of drugs, and also the factors which contributed to the higher costs of production of basic drugs in the country, such as import duty on intermediate chemicals, excise duty on indigenously manufactured raw materials and non-availability of chemicals of high grade purity. Making a rough estimate of the incidence of these factors and based on estimated costs of production in India it found that there was no justification for the selling prices of indigenous basic drugs to exceed the c.i.f. values of equivalent imported drugs (not exported to India at subsidised prices) by more than 60 per cent. It accordingly recommended that wherever the local sale prices exceeded this margin over the c.i.f. values detailed investigation of the cost structure would be necessary to ascertain the factors contributing to higher domestic costs. In a second report dealing with finished products (*i.e.* formulations) the same sub-committee examined also the prices of some essential pharmaceutical preparation and observed that though the cost of production of basic drugs in India were usually higher than those in the developed foreign countries, the cost of production of finished preparations in India were in most cases much less than the domestic prices of similar products in foreign countries and that the differences between the consumers prices and the ex-factory costs of the finished preparations were much less in this country than those in most of the developed foreign countries.

(ii) *Technical Committee of the Ministry of Health and Family Planning* (1963).—In September 1963, the Ministry of Health and Family Planning appointed a Technical Committee with Shri

Gian Prakash, Jt Secretary of the Ministry as Chairman, and the Drugs Controller of India as Member Secretary with the following terms of reference : (a) to examine the reasonableness of the prices of nine specified drugs to the consumers, having regard to the minimum cost of production and other aspects and to furnish their findings at the earliest, and (b) to examine in like manner the reasonableness of the prices of such other essential drugs as the Government considered necessary, subsequently The nine drugs specified under (a) of the terms of reference were

Vitamin $B_1$, Sulphadiazine, Tetracycline, Chloramphenicol, I N H, P A S, Prednisolone Tolbutamide and Acetyl Salicylic Acid The Committee had seven members drawn from the Hindustan Antibiotics Ltd, Planning Commission D G I D Ministry of Home Affairs Ministry of Industry and Ministry of Economic and Defence Co-ordination It submitted its Report to the Government in July 1966 The Report has not yet been published The Committee explained the practical difficulties in the examination of the cost structure and the several limitations under which it had to work Though the Committee had the benefit of advice of a Cost Accounts Officer, it was not possible for it to undertake as detailed a scrutiny of the various data as was desirable or as is being done by the Cost Accounting staff of the Tariff Commission

5 3 7 **Report of the Indian Pharmaceutical Delegation (1964).**—The Development Council for Drugs and Pharmaceuticals felt in 1963 that the industry had not yet reached a stage of maturity where further continued growth could be self-sustaining Therefore the Development Council sponsored in October, 1963 a 11 member team of Indian experts drawn from the Industry and Government, with the late Dr H R Nanji as leader to visit six pharmaceutically advanced countries with the following terms of reference —

(a) To make a survey of the latest techniques in the manufacture of basic drugs and fine chemicals (including synthetic drugs, antibiotics, phytochemicals and glandular products) with special reference to those immediate interest to India, by visits to selected pharmaceutical factories in Italy, Switzerland, West Germany, U K, U S A and Japan

The survey should also include a study of modern trends in :—

(1) Location, design, layout and construction of factories (2) Organisation of basic and applied research. (3) Pilot plants for basic drugs (4) Pharmaceutical product development laboratories and newer methods of sterilization (5) Plant, equipment, utilities and their maintenance; materials handling. (6) Production of basic drugs. (7) Processing and packaging of pharmaceuticals (8) Quality Control.

(b) To study the general situation with regard to manufacture and supply of intermediates and to ascertain to what extent decentralization has been achieved in the supply of intermediates.

(c) To study current opinion in various countries with regard to patent protection for drugs.

(d) To study methods of price regulation, if any, voluntarily or by legislation, adopted by different countries; and to ascertain the prices at which important drugs are sold in the domestic markets of the countries visited.

(e) To submit a report to Government advising on measures to be adopted for the future development of the pharmaceutical industry during the Fourth Five Year Plan period.

The Delegation's Report was published in 1964, and its important recommendations are given in Appendix V-F.

5.3.8. **Drugs Advisory Committee set up at the Ninth Drugs Conference (1965).**—The Ninth Drugs Conference held at Hyderabad in August 1965, set up a broad-based committee representing the interests of manufacturers, wholesalers and medical profession to examine the whole question of price revision and to make suitable recommendations, called the Drugs Advisory Committee, with Dr. Devesh Mookherji of the Indian Medicial Association as convenor and including representatives from Associations representing manufacturers, retailers, Ayurvedic and Unani systems of medicines, etc. This Committee submitted its "Interim Report" to the Government in April 1966. Reference to the recommendations of this Committee has already been made in Chapter 4.

5.3.9. **The Committee on Essential Drugs (1966).**—To advise the Government in regard to the preparation of the list of drugs and medical requisites for manufacture and import

from time to time, the Ministry of Health and Family Planning constituted the Committee on Essential Drugs The Committee consisted of top medical specialists in the country and was headed by the Director General of Health Services It has prepared (1) list of 155 essential drugs manufactured from imported raw materials or imported into the country and 2) a list of 23 essential drugs manufactured in the country Its important recommendations made so far are given in Appendix V G

5 1 1 The development of the drug and pharmaceutical industry and also the formulation and implementation of measures for control has taken place for the most part in the post Independence period Earlier the only significant event was the enactment of the Drugs Act We have already given particulars of the various committees that were set up in the post Independence period together with their terms of reference The impact that the recommendations of these committees had on the development of the industry and measures of control exercised through governmental agencies is discussed below These issues have been grouped under the following heads

1 **Production of drugs**

- (i) Manufacture of essential drugs
- (ii) Formulation on loan licences
- (iii) Small scale units
- (iv) Basic drugs and formulating firms
- (v) Raw Materials
- (vi) Pharmaceutical Equipment
- (vii) Sales and Selling Commission
- (viii) Research
- (ix) Economic Unit
- (x) Assistance by Government
- (xi) Other guide lines

2 **Drugs and balance of payments**

- (i) Collaboration with foreign firms
- (ii) Import of finished drugs and
- (iii) Exports and export promotion

**3. Governmental controls**

(i) Grant of manufacturing licences

(ii) Quality Control and testing and

(iii) Administration of Drugs & Cosmetics Act.

(i) *Manufacture of Essential Drugs.*—One of the recommendations of the Committee on Essential Drugs (1966) was that essential drugs which can be produced with the available facilities should be manufactured by the public sector units. We have seen the establishment of IDPL and the HAL, both large units with a comprehensive programme of manufacture. But no categorical decision by the Government with regard to manufacture of essential drugs entirely by these units has been taken.

(ii) *Formulation on loan licences.*—The Pharmaceutical Inquiry Committee (1944) had recommended that firms which do not have their processing departments but get the processing done on the basis of loan licences should be permitted to set up their own processing departments if they can undertake to produce essential drugs from the basic chemicals or intermediates nearer to basic chemicals within a reasonable time. No hindrance is likely to be placed in the way of such entrepreneures. But licences continue to be granted under the Drugs and Cosmetics Rules to units which do not possess their own plants and premises though they are generally advised to take steps as early as possible to set up their own processing plants.

(iii) *Small scale units.*—In line with the advice tendered in other fields of industrial activity it was suggested that small scale units should form co-operatives in order to pool their resources. Much progress, however, does not appear to have been achieved in this direction.

(iv) *Basic drugs and formulating firms.*—A tendency was noticed on the part of certain processing firms to prefer to import from foreign countries, fine chemicals and intermediates instead of purchasing them from indigenous sources. Simultaneously it was also found that certain manufacturers of fine chemicals and intermediates did not desire to sell them to others keeping their production captive. The Pharmaceutical Enquiry Committee (1954) had recommended that imports of intermediates and fine chemicals should not be made where the raw material was available in the country and also that instead of keeping their proudction

capacity the manufacturers of raw materials should produce them in quantities sufficient to meet not only their own requirements but also of other processing firms. Government have already decided that import of items which are available in the country should not be allowed. They have also been encouraging the production of items which were not available in the country. There does not appear to be any deliberate policy on the part of manufacturers of basic drugs to confine their use to their own units. Wherever capacities and production are adequate these are also being made available to others. The Drugs and Equipment Standards Committee (1965) had recommended that a portion of the basic drugs manufactured must compulsorily be sold and handed over to the formulating firm irrespective of the formulation requirement of the producing unit. Since no controls on this have yet been imposed these are still voluntary.

(v) *Raw materials.*—The Pharmaceutical Enquiry Committee (1954), The West Bengal Drug Inquiry Commission (1964) and the Drugs Equipment Standards Committee (1965) had all emphasised on the need to supply raw material from indigenous sources. Among other things the establishment of a modern slaughter house in important cities for the purpose of collection and preservation of animal glands, cultivation, storage and marketing of medicinal plants, manufacture of essential coal tar products were some of the suggestions made by the above Committees, the latter two activities to be taken over by the Government. It has since been found that the establishment of a modern slaughter house in big cities is not an economic proposition since the recovery of glands which can be of pharmaceutical use is doubtful. The Central Indian Medicinal Plants Organisation and the Indian Council of Agricultural Research have taken up necessary steps for scientific cultivation of medicinal plants. Hindustan Organic Chemicals will develop the coal tar products. Another recommendation was that the import of raw materials should be allowed freely in the case of items which were not indigenously available. This has to a large extent been done. Remission or rebate of import duties was also suggested, in cases of disparities, action for redress is taken by Government. The Mukhopadhya Committee had suggested that Government may take steps to provide raw materials and packing material at the rates prevailing in 1963 to the drug industry. This is obviously a proposal which could not be enforced even if agreed to. It had suggested that the small manufacturers should be given interim increase of 10 per cent on the price of essential and life saving drugs. This was not agreed to by Government.

(vi) *Pharmaceutical Equipment.*—The manufacture of glass lined and high vacuumised equipment as well as other plant and machinery even with foreign collaboration was recommended by the Committee on Drugs Control (1966) and by the Commission set up by West Bengal Government (1964). Adequate enpcouragement has been given to such ventures, and capacity has already been set up in the country for the manufacture of glass lined vessels.

(vii) *Sales and Selling Commission.*—On the subject of availability of drugs, vaccines and sera made by Government institution., the Pharmaceutical Inquiry Committee (1964) had suggested that such drugs should be made available to the general public also Government institutes manufacturing vaccines and sera are now executing supplies of some of their drugs to the general public also through retail channels although such offtake is not high. Supplies made, the Committee observed, to hospitals at concessional rates by the trade found a way into the open market and disrupted normal trade. It recommended that such hospital supplies should be in special packings and not the same for supplies to the trade and that as far as possible even supplies to hospitals should be made through recognised trade channels. This recommendation was accepted and supplies to hospitals are made in hospital packets specially over printed with 'C.G.H.S. supply—not to be sold' where the supplies are made to the Central government health scheme. As regards other hospitals steps are being taken to lay down rules under the Drugs and Cosmetics Act, prohibiting the dealers from stocking such drugs, requesting organisations of manufacturers to evolve a symbol or a special distinguishing mark for such drugs and by requesting Government indenting organisations such as Military Stores and D.G.A.F.M.S. and others to reorganise their internal set up to prevent pilferage. A discount of 25 per cent of the prices at which the goods were sold to trade with an extra one and half to two per cent to cover packing etc. was suggested with the stipulation that the wholesaler should sell at a price which gives him a profit of ten per cent and pass on the balance to the retailer. By and large we find that the same pattern exists in so far as the dealers' commissions are concerned.

(viii) *Research.*—Stress has been laid on the setting up of research laboratories. We have discussed this general issue in chapter-18. There is no disagreement on the point that research is essential and that it must be encouraged.

(ix) *Economic unit.*—The Indian Pharmaceutical Delegation (1964) recommended the installation of multipurpose plants

in order that low volume of production of individual drugs may be compensated by increasing the number of drugs to be produced on the same plant This recommendation is being acted upon by the industry

(x) *Assistance by Govt* —The West Bengal Drugs Enquiry Commission (1964) suggested that Government should improve conditions which cause difficulties to manufacturers such as varying and inadequate pressure of the City's gas supply fluctuation of voltage in the electric supply, high maintenance cost of air conditioning, non availability of refrigeration transport costs and inclusion of basic raw materials under item 28 of the Tariff Schedule These are issues which have otherwise too been pressed by manufacturers The Indian Pharmaceutical Delegation made quite a few suggestions also with regard to the manufacture of drugs It laid emphasis on the suitable choice for the sites for chemical plants and said that it should not be for the sake of regional distribution of industries but by taking into account the essential technical considerations such as assured and continuous water supply and discharge of effluence, and on close collaboration between Atomic Energy authorities and pharmaceutical industry and tax reliefs on research work These recommendations are still under the consideration of Government

(xi) *Other guide lines* —suggested were the maintenance of liberal stocks of spares for replacement of essential items, setting up of pilot plants and encouragement from the Government to consulting organisations so as to enable them to undertake development work on behalf of the industry, liaison between the engineering industries and pharmaceutical manufacturers

5 4 2 **Balance of payment and the drugs industry** —The [illegible] (1954) had recommended that [illegible] factories [illegible] which were not being manufactured already in adequate quantities by other factories in India and further that such manufacture done by starting from basic chemicals or intermediates as nearer to basic chemicals as possible within a reasonable time Another recommendation was that in exceptional cases such companies can be set up with Indian capital participation and after the manufacturing process is completed with a provision for repatriation of foreign capital from the sixth to fifteenth year thereafter It also suggested that no royalty should be paid on any product unless it had been included in the list furnished to and certified by the Ministry of Commerce and Industry, that there was no current

6.13—*Contd.*

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|
| 3 01 | 2 47 | 100% | | Nil | 25 | N A | N A | 199 |
| 83 43 | 45 89 | 100% | | Composite industry covering several heads Drugs & Pharmaceuticals only one of them | 275 | 7 | 3 | N A |
| 38 01 | 26 37 | 100% | | Various fine chemicals like Bismuth compounds etc | 69 | 0 4 | 1 | 340 |
| 169 55 | 79 24 | 35% | 65% | Animal Feed Supplement | 504 | 317 | 63 | 537 |
| 246 78 | 87 12 | 100% | | Other Pharmaceutical Specialities | 430 | N.A | | 580 |
| 61 76 | 37 52 | 75% | 25% | Other drugs and formulations | 263 | 78 | 33 | 1018 |
| 700 94 | 448 85 | .. | 100% | Corticosteroids Calcium Sennosides Beta Ionone | 1645 | 248 | 15 | 2438 |
| 210 32 | 181 07 | 100% | | Anti toxins and toxoids Vitamin tablets, Sulpha tablets Anti Septic (Lemon) | 78 | 11 | 14 | 1313 |
| N A | N.A | N A | N A | N A | N.A | N.A | N A | N A. |
| 657 18 | 325 30 | 100% | . | Hemacin Aureofungin | 717 | 650 | 91 | 2082 |
| 186 60 | 136 80 | 50% | 50% | Procaine Hydrochloride Reversion I M T | 491 | 161 | 33 | 878 |
| 28 27 | 19 22 | 97% | 3% | Nil | 41 | 30 | 73 | 110 |
| 183 18 | 123 36 | | 100% | Sulphapyridine, Sulphathiazol Acitarsol Antihistamines Mercuramide etc and formulations | 383 | 6 | 2 | 807 |
| 211 39 | 147 00 | 40% | 60% | Pharmaceutical Chemicals cort costeroid preparations pharmaceuticals specialities | 315 | 119 | 38 | 530 |

TABLE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 24 | Oriental Pharmaceutical Industries Ltd., Calcutta. | 1966-67 | Private Sector | Public Ltd. | 4.67 | 4.67 | 28 |
| 25 | Parke-Davis India Ltd., Bombay. | 1965-66 | Do. | Do. | 105.00 | 105.00 | 249 |
| 26 | Pfizer Ltd., Bombay | 1965-66 | Do. | Do. | 247.52 | 247.52 | 537 |
| 27 | Recho Products Ltd., Bombay | 1966 | Do. | Do. | 100.00 | 100.00 | 258 |
| 28 | Sarabhai Merck Ltd., Baroda | 1966-67 | Do. | Do. | 16.50 | 16.50 | 178 |
| 29 | Synbiotics Ltd., Baroda | 1966-67 | Do. | Do. | 75.00 | 75.00 | 271 |
| 30 | Themis Pharmaceuticals Ltd., Bombay. | 1965-66 | Do. | Do. | 5.00 | 5.00 | 8 |
| 31 | Standard Pharmaceuitcals Ltd., Calcutta. | 1966-67 | Do. | Do. | 43.43 | 43.43 | 143 |
| 32 | Unichem Laboratories Ltd., Bombay. | 1965-66 | Do. | Do. | 45.00 | 45.00 | 98 |
| 33 | Wander Pharmed Ltd., Bombay. | 1966 | Do. | Do. | 9.90 | 9.90 | 26 |
| 34 | Wyeth Laboratories Ltd., Bombay. | 1965-66 | Do. | Do. | 75.00 | 75.00 | 152 |
| | | | | | 2633.08 | 2526.08 | 7784 |

## 6.3. Present position of units manufacturing formulations of the specified drugs :

6.3.1. In the organised sector there are 34 units which manufacture one or more of specified basic drugs under the inquiry. Of these 30 manufacture formulations also. In addition

6.13—*Concld.*

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|
| 12.08 | 7.07 | 100% | .. | Formulations . . | 46 | N.A. | .. | 6 |
| 157.04 | 81.29 | 17% | 83% | Diphenhydramine Hydrochloride (U S P) | 527 | 109 | 36 | 347 |
| 233 37 | 149.83 | 19% | 81% | .. | 1230 | 451 | 36 | 1980 |
| 224 47 | 154.41 | 11% | 89% | Vanaspati Animal food stuffs | 1531 | 72 | 22 | 152 |
| 113 71 | 72.99 | 65% | 35% | Fine Chemicals, Vitamin B-6, Sorbitol | 233 | 30 | 13 | 728 |
| 246 74 | 183 85 | 52% | 48% | Di-iodoquin Saccharin Nicotinamide, Sodium Saccharin. | 192 | 142 | 74 | 394 |
| 22 75 | 16 31 | 100% | .. | Other Pharmaceutical preparation | 60 | 14 | 23 | 101 |
| 114 12 | 79 72 | 99 52% | 0.48% | Specialities Patents, Tinchtures and Injectibles | 228 | 106 | 47 | 207 |
| 70 18 | 49 06 | 100% | .. | Pharmaceutical Products Injections Syrups Tablets and Ointments | 220 | 116 | 53 | 446 |
| 23 61 | 14 65 | 45% | 55% | Various formulations and basic products | 20 | 20 | 100 | 59 |
| 116 43 | 77 51 | 26% | 74% | .. | 123 | 78 | 63 | 122 |
| 5405 18 | 3410 00 | | | | 10945 | 3299 4 | 30 | 222.13 |

to these, there are 19 units which manufacture single drug formulations of one or more of the specified drugs and nine more units which manufacture multiple drug formulations also. Thus in so for as the scope of the inquiry is concerned, there are 28 more units in the organised sector which come within the purview of our inquiry. The position with regard to the small scale sector is as

follows : Of the 11 small scale units which manufacture basic drugs only four manufacture formulations and the remaing seven confine their activities to the manufacture of basic drugs alone. There are a large number of other small scale manufacturers who manufacture single or multiple drugs formulations from the specified drugs. These are not registered with the D.G.T.D. under the provisions of the Industries (Development and Regulation) Act, 1951. *But* under the *provisions* of section 18(C) of the Drugs and Cosmetics Act and rule 69 framed under the Act, they, have to be licensed by the State Drugs Controller before they can manufacture and market any of the drugs or formulations. It could therefore be considered a happy circumstance that in this industry compulsory registration and licensing by Government is essential irrespective of the size or quantum of out put. The law also requires inspection and checking of the conditions and the processes under which the drug is being manufactured.

6.3.2. Certain qualifying remarks are however needed in respect of the investigation into formulations for the reason that while the inquiry is specific and defined in respect of the basic drugs referred to us for investigation, it is not so in respect of formulations. From the information that could be collected it has been gathered that based on 18 drugs under inquiry the total number of formulations in various applications at present manufactured in the country are numerous and the exact number could not be ascertained. In order to limit the scope of the inquiry to a reasonable number, only 39 single and 30 multiple drugs formulations of a repesentative character were adopted for the purpose of our cost analysis. As regards the general survey it is comprehensive and includes all formulations whether single or multiple of the specified basic drugs.

6.3.3. Under the provisions of Sec. 18(C) Drugs and Cosmetics Act, no manufacture of a drug or formulation can be under taken unless the manufacturer takes out a licence in the prescribed form from the State Drugs Controller. The licence specifies the names of each of the drugs separately and also the period for which it is granted. The licencee is also subjected to periodic checks in order to ensure that the requirements of the law and the rules are being complied with by him. It was to be expected that the respective Drugs Controllers would maintain the records of licences issued showing the details of the drugs and formulations permitted to be manufactured by the different licencees, the name and location of the unit licensed, the renewals made at periodic intervals and the results of inspection carried out by

their staff under the provision of the rules and that each Drugs Controller would be in a position to provide to us or to any other bonafide inquiring authority, names and particulars of the units licensed who manufacture or formulate certain items of drugs or formulations and information in respect of the results of inspection of drugs manufactured for the purpose of quality control It was however after much prodding that we received replies regarding the number of units licensed by the State Drugs Controllers In the case of the State of Punjab no reply has been received from the Drugs Controller We suggest that steps may be taken to ensure that Drugs Controllers maintain records of the licences issued by them and that these should be readily available It is also desirable that the list of such licencees is published periodically on a central basis for the whole country since drugs manufactured in one territory are marketable all over the country and may also be exported Such lists should contain the names of the units with location, year of grant of licence, drugs and formulations specified in the licence, installed capacity and annual production in terms of the quantity of formulation and drugs to be manufactured or suitable aggregates of the same

Even though there are more than 2000 small scale units and each one functions under a licence, very little information is available in respect of their activities and contribution to the pharmaceutical industry It is suggested that all the State Drugs Controllers should also collect information annually in respect of the small scale units under the following heads

1 Basic drugs manufactured with value and quantity of each product

2 Formulations manufactured with value and quanity of each product

3 Data in respect of assets and reserves to ascertain the capital employed and net worth

Similar particulars may also be obtained in respect of the units which have been licensed to manufacture Unani and Ayurvedic medicines Such data should as far as possible be published at suitable intervals so that a proper assessment of the development of the pharmaceutical industry may be made

6 3 4 From the data gathered by us we have arrived at the following picture of the State wise distribution with regard to the manufacture of drugs and formulations (Tables 6 14 and 6 15)

TABLE

*Particulars about total number of Licensed uni*

| Sl. No. | State | Total number of units licensed | | | Number of units licensed for manufacture of 18 basic drugs | | |
|---|---|---|---|---|---|---|---|
| | | Large scale | Small scale | Total | Large scale | Small scale | Total |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | Andhra Pradesh | 5 | 168 | 73 | 5 | 2 | 7 |
| 2 | Assam | Nil | 12 | 12 | Nil | Nil | Nil |
| 3 | Bihar | 1 | 38 | 39 | Nil | Nil | Nil |
| 4 | Delhi | 1 | 80 | 81 | Nil | Nil | Nil |
| 5 | Gujarat | 11 | 129 | 140 | 5 | 1 | 6 |
| 6 | Goa | Nil | Nil | Nil | Nil | Nil | Nil |
| 7 | Haryana | Nil | Nil | Nil | — | — | — |
| 8 | Himachal Pradesh | Nil | 9 | 9 | Nil | Nil | Nil |
| 9 | Jammu & Kashmir | Nil | 5 | 5 | Nil | Nil | Nil |
| 10 | Kerala | 1 | 51 | 52 | Nil | 1 | 1 |
| 11 | Madhya Pradesh | Nil | 108 | 108 | Nil | 1 | 1 |
| 12 | Madras | 7 | 192 | 199 | Nil | Nil | Nil |
| 13 | Maharashtra | 63 | 673 | 736 | 23 | 4 | 27 |
| 14 | Mysore | 2 | 5854 | 56 | Nil | Nil | Nil |
| 15 | Orissa | Nil | 24 | 24 | Nil | Nil | Nil |
| 16 | Pondicherry | Nil | 2 | 2 | Nil | Nil | Nil |
| 17 | Punjab | 4 | 103 | 101 | 1 | Nil | 1 |
| 18 | Rajasthan | Nil | 51 | 51 | Nil | Nil | Nil |
| 19 | Uttar Pradesh | 2 | 196 | 198 | 2 | Nil | 2 |
| 20 | West Bengal | 23 | 232 | 255 | 10 | 7 | 17 |
| 1 | Tripura | Nil | 4 | 4 | Nil | Nil | Nil |
| | TOTAL | 120 (A) | 2,131 | 2,251 | 46 (B) | 16 | 62 |

NOTE.—(A) Two units have 2 factories each.
(B) One unit has 2 factories.

6.14

*for basic drugs and formulations*

| Number of units licensed to manufacture formulations included in the scope of the inquiry | | | Units common between columns (6) to (8) & (9) to (11) | | | Total number of units with in the purview of the inquiry | | |
|---|---|---|---|---|---|---|---|---|
| Large scale | Small scale | Total | Large scale | Small scale | Total | Large scale | Small scale | Total |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | 4 | 6 | 2 | Nil | 2 | 5 | 6 | 11 |
| Nil | 2 | 2 | Nil | Nil | Nil | Nil | 2 | 2 |
| Nil | 4 | 4 | Nil | Nil | Nil | Nil | 4 | 4 |
| Nil | 8 | 8 | Nil | Nil | Nil | Nil | 8 | 8 |
| 3 | 18 | 21 | 2 | 1 | 3 | 6 | 18 | 24 |
| Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| .. | .. | .. | .. | .. | .. | .. | . | |
| Nil | 1 | 1 | Nil | Nil | Nil | Nil | 1 | 1 |
| Nil | 5 | 5 | Nil | Nil | Nil | Nil | 5 | 5 |
| Nil | 1 | 1 | Nil | 1 | 1 | Nil | 1 | 1 |
| Nil | 22 | 22 | Nil | Nil | Nil | Nil | 23 | 23 |
| 1 | 13 | 14 | Nil | Nil | Nil | 1 | 13 | 14 |
| 38 | 180 | 218 | 22 | Nil | 22 | 39 | 184 | 223 |
| Nil | 14 | 14 | Nil | Nil | Nil | Nil | 14 | 14 |
| Nil | 9 | 9 | Nil | Nil | Nil | Nil | 9 | 9 |
| Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| 1 | Nil | 1 | 1 | Nil | 1 | 1 | Nil | 1 |
| Nil | 11 | 11 | Nil | Nil | Nil | Nil | 11 | 11 |
| 1 | 31 | 32 | 1 | Nil | 1 | 2 | 31 | 33 |
| 13 | 61 | 74 | 9 | 2 | 11 | 14 | 66 | 80 |
| Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| 59 (B) | 384 | 443 | 36 | 4 | 40 | 68 | 396 | 464 |

TABLE 6.15

*Number of units manufacturing formulations of the specified drugs*

| Sl. No. | State | Number of units manufacturing single drug formulations of the specified drugs | | | Number of units manufacturing multiple drug formulations of the specified drugs | | |
|---|---|---|---|---|---|---|---|
| | | Large Scale | Small Scale | Total | Large Scale | Small Scale | Total |
| 1 | Andhra Pradesh | 2 | 4 | 6 | 1 | 1 | 2 |
| 2 | Assam | .. | 2 | 2 | .. | .. | .. |
| 3 | Bihar | .. | 4 | 4 | .. | .. | .. |
| 4 | Delhi | .. | 8 | 8 | .. | 1 | 1 |
| 5 | Goa | .. | .. | .. | .. | .. | .. |
| 6 | Gujarat | 2 | 18 | 20 | 2 | .. | 2 |
| 7 | Haryana | .. | .. | .. | .. | .. | .. |
| 8 | Himahcal Pradesh | .. | 1 | 1 | .. | .. | .. |
| 9 | Jammu & Kashmir | .. | 5 | 5 | .. | 3 | 3 |
| 10 | Kerala | .. | 1 | 1 | .. | 1 | 1 |
| 11 | Madhya Pradesh | 1 | 22 | 22 | .. | .. | .. |
| 12 | Madras | 1 | 13 | 14 | .. | 6 | 6 |
| 13 | Maharashtra | 38 | 180 | 218 | 13 | 6 | 19 |
| 14 | Mysore | .. | 14 | 14 | .. | .. | .. |
| 15 | Orissa | .. | 9 | 9 | .. | .. | .. |
| 16 | Pondicherry | .. | .. | .. | .. | .. | .. |
| 17 | Punjab | 1 | .. | 1 | .. | — | — |
| 18 | Rajasthan | .. | 11 | 11 | .. | 3 | 3 |
| 19 | Uttar Pradesh | 1 | 31 | 32 | .. | .. | .. |
| 20 | West Bengal | 13 | 61 | 74 | 7 | 23 | 30 |
| 21 | Tripura | .. | .. | .. | .. | .. | .. |
| | TOTAL | 58 | 384 | 442 | 23 | 44 | 67 |

## CHAPTER 7

## CAPACITY

### 7.1. Basic drugs :

7.1.1 In the organised sector there are 14 units which have been licensed with capacities for the manufacture of one or more of the basic drugs under inquiry. In the small scale sector as has already been mentioned, there are 16 such units. Particulars of the units licensed for the manufacture of one or more drugs and of those which have already established capacities for the drug licensed are as follows

TABLE 7.1

*Number of units licensed/approved for one or more drugs and the number which have established capacities for all the drugs licensed*

| No. of specified drugs licensed/approved to a unit | No. of units licensed approved | | No. of units which have established capacities | | | |
|---|---|---|---|---|---|---|
| | Large scale | Small scale | For one or more of the licensed drug | | For all the licensed drugs | |
| | | | Large scale | Small scale | Large scale | Small scale |
| 1 | 26 | 14 | 18 | 9 | 17 | 9 |
| 2 | 7 | 1 | 6 | 1 | 4 | |
| 3 | 3 | 1 | 3 | 1 | 1 | |
| 4 | 5 | | 4 | | 3 | |
| 5 | 3 | | 3 | | 1 | |
| TOTAL | 44 | 16 | 34 | 11 | 26 | 9 |

7.1.2 Particulars of the drugs for which capacities have been sanctioned together with the names of the units are given in Table 7.2

TABLE

*Licensed and installed capacities for*

| Sl. No. | Basic Drug and Names of the Units | Licensed/apporved capacity: Year of grant of licence | Unit of measurement | In the year of grant of licence | In 1962 | In 1963 | In 1964 |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | *Vitamin A* | | | | | | |
| | 1. Roche Products | 1958 | MMU | 10 | 10 | 10 | 10 |
| | 2. Glaxo Labs. | 1957 | ,, | 10 | 10 | 10 | 10 |
| | | | | | 20 | 20 | 20 |
| 2 | *Vitamin B-12* | | | | | | |
| | (a) *Vitamin B-12* | | | | | | |
| | 1. Merck Sharp | 1958 | Kg. | 4·0 | 25 | 25 | 25 |
| | 2. Synbiotics | 1956 | ,, | 1·2 | 13·2 | 13·6 | 13·2 |
| | 3. Themis Pharmaceuticals. | 1965 | ,, | 12·0 | .. | .. | .. |
| | | | | | 38·2 | 38·2 | 38·2 |
| | (b) *Vitamin B-12(b)* | | | | | | |
| | 1. Merck Sharp | 1961 | Kg. | (Covered under the overall licensed | | | |
| | 2. Glaxo Labs. | 1964 | ,, | 6 | .. | .. | 6 |
| | 3. Alembic Chemical. | 1966 | ,, | 20 | .. | .. | .. |
| | | | | | .. | .. | 6 |

7·2

*each specified basic drug*

| Licensed/approved capacity | | | | Installed capacity | | | | |
|---|---|---|---|---|---|---|---|---|
| In 1965 | In 1966 | In 1967 | In 1962 | In 1963 | In 1964 | In 1965 | In 1966 | In 1967 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 15 | 15 | 15 | 20 | 20 | 20 | 20 | 20 | 20 |
| 10 | 10 | 10 | 20 | 20 | 20 | 20 | 20 | 20 |
| 25 | 25 | 25 | 40 | 40 | 40 | 40 | 40 | 40 |
| 25 | 25 | 25 | 25 | 25 | 40 | 40 | 40 | 40 |
| 13 2 | 13 2 | 13 2 | — | .. | .. | | | — |
| 12 | 12 | 12 | .. | .. | | | | 12 |
| 50 2 | 50 2 | 50 2 | 25 | 25 | 40 | 40 | 40 | 52 |
| capacity for Vitamin B-12) | | | 24 | 24 | 24 | 24 | 24 | 24 |
| 6 | 6 | 6 | . | 5 | 5 | 6 | 6 | 6 |
| | 20 | 20 | . | | .. | | | |
| 6 | 26 | 26 | 24 | 29 | 29 | 30 | 30 | 30 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| [illegible] | | | | | | | |
| 1. [illegible] | [illegible] | Tonnes | | | | | |
| 2. [illegible] | [illegible] | [illegible] | | | | | |
| [illegible] | | | | 110 | 110 | 110 | |
| 1. [illegible] | [illegible] | Tonnes | [illegible] | [illegible] | [illegible] | [illegible] | |
| 2. May & Baker | [illegible] | ,, | [illegible] | [illegible] | [illegible] | [illegible] | |
| 3. [illegible] | [illegible] | ,, | [illegible] | [illegible] | [illegible] | [illegible] | |
| [illegible] all [illegible] | | | | | | | |
| | | | | 175 | 17? | 17? | |
| 5. Penicillin | | | | | | | |
| 1. Hindustan Antibiotics. | 19?? | MMU | 10?.? | 82 | [illegible] | [illegible] | |
| 2. Alembic Chemical | 1954 | ,, | 4.0 | 20 | 20 | 20 | |
| 3. Standard Pharmaceuticals. | 1957 | ,, | 1.4 | 10 | 1? | 20 | |
| 4. IDPL (Rishikesh). | 1962 | ,, | 140.0 | 140 | 14? | 140 | |
| | | | | 215 | 2?1 | 2?4 | |
| 6. Streptomycin | | | | | | | |
| 1. Hindustan Antibiotics. | 1959 | Tonnes | 15.2 | 90 | 9? | 90 | |
| 2. Synbiotics | 1960 | ,, | 15.0 | 15 | 15 | 15 | |
| 3. IDPL (Rishikesh). | 1962 | ,, | 85.0 | 85 | 8? | 85 | |
| | | | | 190 | 199 | 190 | |

7.2—*Contd.*

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|
| 60 | 90 | 120 | 60 | 65 | 81 | 90 | 150 | 180 |
| 50 | 125 | 125 | . | | | | | |
| 110 | 215 | 215 | 60 | 65 | 81 | 90 | 150 | 180 |
| 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| 90 | 90 | 90 | 35 | 35 | 35 | 110 | 110 | 110* |
| capacity of | 160 | | .. | | . | | . | |
| 173 | 173 | 173 | 118 | 118 | 118 | 193 | 193 | 193 |
| 84 | 84 | 81 | 45 | 54 | 60 | 75 | 77 | 77 |
| 20 | 20 | 20 | 10 | 10 | 20 | 28 | 50 | 50 |
| 20 | 20 | 20 | 10 | 10 | 10 | 20 | 20 | 20 |
| 140 | 140 | 140 | | . | | | | |
| 264 | 264 | 264 | 65 | 74 | 90 | 123 | 147 | 147 |
| 90 | 90 | 90 | .. | 40 | 10 | 80 | 80 | 80 |
| 15 | 40 | 40 | . | 15 | 30 | 40 | 40 | 40 |
| 85 | 85 | 85 | | .. | | . | | |
| 190 | 215 | 215 | | 55 | 70 | 120 | 120 | 120 |

*Tentative capacity for sulphadiazine. Total installed capacity for all sulpha drugs is 210 tonnes but effective operational capacity is only 175 tonnes

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
|---|---|---|---|---|---|---|---|
| 7 | *Chloramphenicol* | | | | | | |
| | 1. Parke Davis . | 1956 | Tonnes | 6·4 | 20·0 | 20·0 | 20 |
| | 2. Boehringer-Knoll | 1960 | ,, | 4·2 | 4·2 | 4·2 | 4 |
| | 3. Mac Labs. . | 1956 | ,, | 0·8 | 0·8 | 0·8 | 0 |
| | 4. Neo Pharma. . | 1960 | ,, | 3·6 | 3·6 | 3·6 | 3 |
| | 5. Dey's Medical . | 1962 | ,, | 18·0 | 18·0 | 18·0 | 18· |
| | | | | | 46·6 | 46·6 | 46·6 |
| 8 | *Tetracyclines* | | | | | | |
| | 1. Pfizer . | 1960 | Tonnes | 5·0 | 5 | 5 | 5 |
| | 2. Cyanamid . | 1960 | ,, | 10·0 | 10 | 10 | 10 |
| | 3. Hindustan Antibiotics. | 1959 | ,, | 1·5 | 1·5 | 1·5 | 1·5 |
| | 4. Synbiotics . | 1960 | ,, | 3·0 | 3 | 3 | 3 |
| | 5. I.D.P.L. (Rishikesh). | 1962 | ,, | 120·0 | 120·0 | 120 | 120 |
| | | | | | 139·5 | 139·5 | 139·5 |
| 9 | *Amodiaquin* | | | | | | |
| | 1. Parke Davis . | 1956 | Tonnes | 36·0 | 36 | 36 | 36 |
| | 2. Albert David . | 1955 | ,, | 1·0 | 1 | 1 | 1 |
| | | | | | 37 | 37 | 37 |
| 10 | *Chloroquin* | | | | | | |
| | 1. Bengal Immunity. | 1960 | Tonnes | 1·0 | 1 | 1 | 1 |
| | 2. May & Baker . | 1963 | ,, | 12·0 | 12 | 12 | 12 |
| | 3. Bayer . | 1962 | ,, | 4·0 | 4 | 4 | 4 |
| | | | | | 17 | 17 | 17 |

7.2—*Contd.*

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|
| 20 0 | 20 0 | 20·0 | 10 | 10 | 10 | 10 | 10 | 10 |
| 4 2 | 30 0 | 30 0 | 3 | 3 | 12 | 12 | 12 | 12 |
| 0 8 | 0 8 | 0 8 | — | — | 1 2 | 1 2 | 1 2 | 1 2 |
| 3 6 | 3 6 | 3 6 | — | — | — | .. | | |
| 18 0 | 18 0 | 18 0 | — | — | — | | | |
| 46 6 | 72 4 | 72 4 | 13 | 13 | 23 2 | 23 2 | 23 2 | 23 2 |
| 10 | 10 | 10 | 5 | 5 | 10 | 10 | 10 | 10 |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 1 5 | 1 5 | 1 5 | 1·5 | 1 5 | 1 5 | 1 5 | 1 5 | 1 5 |
| 3 | 3 | 3 | 1 5 | 1 5 | 1 5 | 4 0 | 4 0 | 4 0 |
| 120 | 120 | 120 | — | — | . | | | |
| 141 5 | 144 5 | 144 5 | 18 0 | 18 0 | 23 0 | 25 5 | 25 5 | 25 5 |
| 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| 1 | 1 | 1 | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 |
| 37 | 37 | 37 | 36 6 | 36 6 | 36 6 | 36 6 | 36 6 | 36 6 |
| 10 | 10 | 10 | 1·1 | 1·1 | 1 3 | 3 0 | 3 0 | 3 0 |
| 12 | 12 | 12 | . | | | — | — | — |
| 4 | 4 | 4 | . | | | | | |
| 26 | 26 | 26 | 1 1 | 1 1 | 1 3 | 3 0 | 3 0 | 3 0 |

TAB

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 11 A. *Iodo-Chlor-Hydroxy-Quinoline.* | | | | | | | |
| (i) *Large-Scale Units* | | | | | | | |
| 1. East India Pharmaceutical | | 1952 | Tonnes | 6.5 | 6.5 | 6·5 | 6·5 |
| 2. Bengal Chemical | | 1952 | ,, | 1·1 | 1·1 | 1·1 | 1·1 |
| 3. Brahmachari Research Institute | | 1952 | ,, | 2·0 | 2·0 | 2·0 | 2·0 |
| 4. Albert David | | 1952 | ,, | 3·5 | 3·5 | 3·5 | 3·5 |
| 5. Atul Products | | 1954 | ,, | 41·0 | 41·0 | 41·0 | 41·0 |
| 6. Alembic Chemical | | 1954 | ,, | 1·0 | 1·0 | 1·0 | 1·0 |
| 7. Standard Pharmaceuticals | | 1954 | ,, | 2·5 | 2·5 | 2·5 | 2·5 |
| 8. Hind Chemicals | | 1952 | ,, | 0·6 | 0·6 | 0·6 | 0·6 |
| 9. Themis Pharmaceuticals | | 1952 | ,, | 0·2 | 0·2 | 0·2 | 0·2 |
| 10. Indian Research Institute | | 1952 | ,, | 0·2 | 0·2 | 0·2 | 0·2 |
| | | | | | 58·6 | 58·6 | 58·6 |
| (ii) *Small Scale Units.* | | | | | | | |
| 1. G.D.A. Chemicals | | | Tonnes | 5·4 | 5·4 | 5·4 | 5·4 |
| 2. Neogy Labs. | | | ,, | 10·0 | 10·0 | 10·0 | 10·0 |
| 3. Syno-Chem. | | | ,, | 5·0 | .. | 5·0 | 5·0 |
| 4. Alliance Trading | | | ,, | 10·3 | .. | 10·3 | 10·3 |
| 5. Sunny Industries | | | ,, | 4·0 | .. | .. | .. |

7.2—*Contd*

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|
| 6 5 | 6 5 | 6 5 | 36 9 | 36 9 | 36 9 | 36 9 | 36 9 | 36 9 |
| 1 1 | 1 1 | 1 1 | 1 0 | 1.0 | 1 0 | 1 0 | 1 0 | 1 0 |
| 2 0 | 2 0 | 2 0 | 2 0 | 2 0 | 2 0 | 2 0 | 2 0 | 2 0 |
| 3 5 | 3 5 | 3 5 | 3 0 | 3·0 | 3 0 | 3 0 | 3 0 | 3 0 |
| 41 0 | 41 0 | 41 0 | 40 0 | 40·0 | 40 0 | 40·0 | 40 0 | 40 0 |
| 1 0 | 1 0 | 1 0 | 4 0 | 4.0 | 4.0 | 4.0 | 4 0 | 4 0 |
| 2 5 | 2 5 | 2 5 | 6 0 | 6 0 | 6 0 | 6 0 | 6 0 | 6 0 |
| 0 6 | 0 6 | 0 6 | 0 75 | 0 75 | 0 75 | 0 75 | 0 75 | 0 75 |
| 0 2 | 0 2 | 0 2 | .. | .. | — | .. | — | — |
| 0 2 | 0 2 | 0 2 | .. | . | — |  | . |  |
| 58 6 | 58 6 | 58 6 | 93 7 | 93 7 | 93 7 | 93 7 | 93 7 | 93 7 |
| 5 4 | 5 4 | 5 4 | 2·7 | 2·7 | 2·7 | 2 7 | 2·7 | 2·7 |
| 10 0 | 10 0 | 10 0 | 10·0 | 10 0 | 10 0 | 10 0 | 10·0 | 10·0 |
| 5 0 | 5 0 | 5 0 | . | 5 0 | 5 0 | 5 0 | 5·0 | 5 0 |
| 10 3 | 10 3 | 10 3 | . | 10 3 | 10·3 | 10 3 | 10·3 | 10 3 |
| 4 0 | 4 0 | 4 0 | .. | .. | . | 4 0 | 4 0 | 4 0 |

TAB[LE]

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 6. Swiss Chemicals . . | | | Tonnes | 15·6 | .. | .. | .. |
| 7. Usan Labs. . | | | ,, | 12·0 | .. | .. | .. |
| 8. Texdyes . . | | | ,, | 2·0 | .. | .. | .. |
| 9. Quinochem. . | | | ,, | 6.0 | .. | .. | .. |
| 10. Eagle Lab. . | | | ,, | 6·0 | .. | 6·0 | 6·0 |
| 11. British Medicine . . | | | ,, | 3·6 | .. | .. | .. |
| 12. Universal Chemicals . . | | 1966 | ,, | 5·0 | .. | .. | .. |
| | | | | | 15·4 | 36·7 | 40·7 |
| B. *Di-Iodo-Hydroxy-Quinoline.* | | | | | | | |
| (i) *Large Scale Sector* | | | | | | | |
| 1. Bengal Chemical . . . | | 1952 | Tonnes | (Included in the capacity of | | | |
| 2. Brahmachari Research Inst. | | 1952 | ,, | Do. | | | |
| 3. Albert David . | | 1952 | ,, | Do. | | | |
| 4. Synbiotics . | | 1957 | ,, | 5·5 | 5·5 | 5·5 | 5·5 |
| 5. Bengal Immunity . . . | | 1952 | ,, | 4·5 | 4·5 | 4·5 | 4·5 |
| 6. May & Baker . | | 1955 | ,, | 4·2 | 4·2 | 4·2 | 4·2 |
| 7. Alembic Chemical . . | | 1952 | ,, | (Included in the capacity of | | | |
| 8. Standard Pharmaceuticals . | | 1952 | ,, | Do. | | | |
| 9. Biological Evans | | 1960 | ,, | 2·0 | 2·0 | 2·0 | 2·0 |
| 10. East India Pharmaceutical | | 1952 | ,, | (Included in the capacity of | | | |
| | | | | 16·2 | 16·2 | 16·2 | 16·2 |

7 2—*Contd*

| | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|
| | 15 6 | 15 6 | 15 6 | | | | 15 6 | 15 6 | 15 6 |
| | 6 0 | 6 0 | 6 0 | | 6 0 | 6 0 | 6 0 | 6 0 | 6 0 |
| | 3 6 | 3 6 | 3 6 | | | | 3 6 | 3 6 | 3 6 |
| | | 5 0 | 5 0 | | | | | | |
| | 59 9 | 64 9 | 64 9 | 12 7 | 34 0 | 34 0 | 57 2 | 57 2 | 57 2 |

| | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|
| Iodo-Chlor) | | | | 0 2 | 0 2 | 0 2 | 0 2 | 0 2 | 0 2 |
| | | | | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 |
| | | | | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 |
| | 5 5 | 5 5 | 5 5 | 12 0 | 12 0 | 12 0 | 12 0 | 12 0 | 12 0 |
| | 4 5 | 4·5 | 4·5 | 4 5 | 4 5 | 4 5 | 4 5 | 4 5 | 4 5 |
| | 4 2 | 4 2 | 4 2 | 4 2 | 4 2 | 4 2 | 4 2 | 4 2 | 4 2 |
| Iodo-Chlor) | | | | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 |
| | | | | (Capacity included in that of Iodo-Chlor) | | | | | |
| | 2 0 | 2 0 | 2 0 | .. | .. | .. | 5 0 | 6 0 | 6 0 |
| Iodo-Chlor) | | | | (Capacity included in that of Iodo-Chlor) | | | | | |
| | 16 2 | 16 2 | 16 2 | 25 1 | 25 1 | 25 1 | 30 1 | 31 1 | 31 1 |

9—I T C Bom/70

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| (iii) South Sub... | | | | | | |
| 1. N...ogy Labs. | | | | | | |
| 2. Sw... Chemical | | Tonnes | (Included in the capacity f... | | | |
| 3. Sunny Indus-tries | | .. | | Do. | | |
| 4. N...arathna Pharmaceuticals | | .. | | Do. | | |
| 5. British Medicine | | .. | 0.7 | .. | .. | .. |
| 6. Eagle Lab. | | .. | 1.8 | .. | .. | .. |
| | | .. | (Included in the capacity for | | | |
| | | | | .. | .. | .. |
| **12 Chlorpropamide** | | | | | | |
| 1. Albert David | 1960 | Tonnes | 1.0 | 1.0 | 1.0 | 1.0 |
| 2. Bengal Chemical | 1961 | .. | 0.6 | 0.6 | 0.6 | 0.6 |
| 3. Pfizer | 1961 | .. | 1.5 | 1.5 | 1.5 | 1.5 |
| 4. Kemp & Co | 1952 | .. | 0.1 | 0.1 | 0.1 | 0.1 |
| | | | | 3.2 | 3.2 | 3.2 |
| **13 Tolbutamide** | | | | | | |
| 1. Albert David | 1960 | Tonnes | 3.0 | 3.0 | 3.0 | 3.0 |
| 2. Unichem Lab. | 1960 | .. | 3.0 | 3.0 | 3.0 | 3.0 |
| 3. Hoechst Pharmaceuticals | 1959 | .. | 36.0 | 36.0 | 36.0 | 36.0 |
| | | | | 42.0 | 42.0 | 42.0 |
| **14 Insulin** | | | | | | |
| 1. Boots | 1960 | M.U. | 1,500 | 1,500 | 1,500 | 1,500 |
| | | | | 1,500 | 1,500 | 1,500 |

7.2—*Contd*

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|
| Iodo-Chlor) | | | (Included in the capacity for Iodo-Chlor) | | | | | |
| | | | | | Do | | | |
| | | | | | Do | | | |
| — | 0·7 | 0·7 | . | — | — | — | 4 06 | 4 06 |
| 1 8 | 1·8 | 1·8 | .. | — | — | 1 8 | 1 8 | 1 8 |
| Iodo-Chlor) | | | (Included in the capacity for Iodo Chlor) | | | | | |
| 1·8 | 2 5 | 2·5 | — | — | — | 1 8 | 5 8 | 5 8 |
| 1 0 | 1 0 | 1 0 | 3·6 | 3 6 | 3 6 | 3 6 | 3 6 | 3 6 |
| 0 6 | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 |
| 1·5 | 1 5 | 1 5 | | | . | 5 0 | 5 0 | 5 0* |
| 0 1 | 0 1 | 0 1 | .. | . | | | | |
| 3 2 | 3 2 | 3 2 | 4 2 | 4 2 | 4 2 | 9 2 | 9 2 | 9 2 |
| 3·0 | 3·0 | 3 0 | 3 6 | 3 6 | 3 6 | 3 6 | 3 6 | 3 6 |
| 3 0 | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 |
| 36 0 | 36 0 | 36 0 | 36 0 | 36 0 | 36 0 | 36 0 | 36 0 | 36 0 |
| 42 0 | 42 0 | 42 0 | 42 6 | 42 6 | 42 6 | 42 6 | 42 6 | 42 6 |
| 1,500 | 1,500 | 1,500 | .. | .. | .. | 1,080 | 1,080 | 1,080 |
| 1 500 | 1,500 | 1,500 | . | . | . | 1,080 | 1,080 | 1,080 |

[*Single shift]

TABLE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 15 I.N.H. | | | | | | | |
| (a) *Large Scale Sector.* | | | | | | | |
| | 1. Albert David | 1952 | Tonnes | 3·6 | 3·6 | 3·6 | 3·6 |
| | 2. Bengal Immunity | 1954 | ,, | 0·7 | 5·4 | 5·4 | 5·4 |
| | 3. Bengal Chemical | 1952 | ,, | 2·1 | 2·1 | 2·1 | 2·1 |
| | 4. Pfizer | 1955 | ,, | 6·0 | 15·6 | 15·6 | 15·6 |
| | 5. Calcutta Chemical | 1957 | ,, | 1·8 | 1·8 | 1·8 | 1·8 |
| | 6. Symbiotics | 1957 | ,, | 10·8 | 27·0 | 27·0 | 27·0 |
| | 7. OPIL | 1958 | ,, | 1·3 | 1·3 | 1·3 | 1·3 |
| | 8. Biological Evans | 1962 | ,, | 10·0 | 10·0 | 10·0 | 10·0 |
| | 9. Chemo-Pharma | 1966 | ,, | N.A. | .. | .. | .. |
| | 10. IDPL (Hyderabad) | 1952 | ,, | 20·0 | 20·0 | 20·0 | 20·0 |
| | 11. Warner Hindustan. | 1962 | ,, | 25·0 | 25·0 | 25·0 | 25·0 |
| | 12. CIPLA | 1967 | ,, | 10·0 | .. | .. | .. |
| | 13. South India Res. Inst. | 1967 | ,, | 50·0 | .. | .. | .. |
| | 14. Atul Drug House. | 1967 | ,, | .. | .. | .. | .. |
| | | | | | 111·8 | 111·8 | 111·8 |
| (B) *Small Scale Sector.* | | | | | | | |
| | 1. Dr. Karanth's Pharmaceutical | | Tonnes | 7·2 | .. | .. | 7·2 |
| | 2. Suneeta Labs | | ,, | 3·0 | .. | .. | .. |
| | 3. Navarathna Pharmaceutical | | ,, | 6·0 | .. | .. | .. |
| | 4. Gujarat Pharmaceuticals | | ,, | 6·0 | .. | .. | .. |
| | | | | | .. | .. | 7·2 |

7 2—*Contd*

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|
| 3 6 | 3 6 | 3 6 | 6 0 | 6 0 | 6 0 | 6 0 | 6 0 | 6 0 |
| 20 0 | 20 0 | 20 0 | 10 0 | 10 0 | 10 0 | 10 0 | 10 0 | 10 0 |
| 2 1 | 2 1 | 2 1 | 2 1 | 2 1 | 2 1 | 2 1 | 2 1 | 2 1 |
| 15 6 | 15 6 | 15 6 | 20 0 | 20 0 | 20 0 | 20 0 | 38 0 | 38 0 |
| 1 8 | 1 8 | 1 8 | 1 1 | 1 1 | 1 9 | 1 9 | 1 9 | 1 9 |
| 27 0 | 27 0 | 27 0 | 30 0 | 30 0 | 30 0 | 30 0 | 30 0 | 30 0 |
| 1 3 | 1 3 | 1 3 | 1 3 | 1 3 | 1 3 | 1 3 | 1 3 | 1 3 |
| 10 0 | 10 0 | 10 0 | | | 18 0 | 18 0 | 18 0 | 18 0 |
| | 60 0 | 60 0 | | | | | 60 0 | 60 0 |
| 20 0 | 20 0 | 20 0 | | | | | | |
| 25 0 | 25 0 | 25 0 | | | | | | |
| | | 10 0 | | | | | | |
| | | 50 0 | | | | | | |
| | | 160 0 | | | | | | |
| 126 4 | 186 4 | 406 4 | 70 5 | 70 5 | 89 3 | 89 3 | 167 3 | 167 3 |
| 7 2 | 8 0 | 8 0 | | | 7 2 | 7 2 | 8 0 | 8 0 |
| | | 3 0 | | | | | | 3 0 |
| | | 6 0 | | | | | | |
| | | 6 0 | | | | | | |
| 7 2 | 8 0 | 23 0 | | | 7 2 | 7 2 | 8 0 | 11 0 |

TABLE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 16 *P.A.S.* | | | | | | | |
| | 1. Biochemical & Synthetic. . | 1953 | Tonnes | 24·0 | 100 | 100 | 100 |
| | 2. Pfizer . . | 1958 | ,, | 60·0 | 60 | 60 | 60 |
| | 3. Biological Evans | 1960 | ,, | 36·0 | 36 | 36 | 50 |
| | 4. Wander Pharm-ed . . . | 1961 | ,, | 120·0 | 120 | 120 | 120 |
| | 5. South India Research Inst. . | 1967 | ,, | 50·0 | .. | .. | .. |
| | 6. Chemo-Pharma . | 1967 | ,, | 30·0 | .. | .. | .. |
| | | | | | 316 | 316 | 330 |
| 17 *Tetanus Anti-toxin** | | | | | | | |
| | 1. Bengal Chemical | 1952 | M.U. | 270 | 270 | 270 | 270 |
| | 2. Bengal Immunity . . | 1952 | ,, | 9,500 | 9,500 | 9,500 | 9,500 |
| | 3. Haffkine Inst. . | 1952 | ,, | 3,000 | 3,000 | 3,000 | 3,000 |
| | 4. Biological Evans | 1961 | ,, | 2,160 | 2,160 | 2,160 | 2,160 |
| | 5. Dey's Medical . | 1965 | ,, | 1,140 | .. | .. | .. |
| | 6. Chowgule Hind | 1966 | ,, | 7,500 | .. | .. | .. |
| | | | | | 14,930 | 14,930 | 14,930 |
| 18 *Prednisolone*** | | | | | | | |
| | 1. Glaxo Labs . | 1957 | Kg. | 120 | 120 | 120 | 300 |
| | 2. Merck Sharp . | 1958 | ,, | 120 | 120 | 120 | 120 |
| | 3. Wyeth Labs . | 1960 | ,, | 100 | 100 | 100 | 100 |
| | | | | | 340 | 340 | 520 |

* On an average 1 litre of Tetanus Anti-toxin equals 3 M.U.

**In the case of all units for Prednisolone, the figures for all years are the over-all capacities licensed for all corticosteroids.

7 2—*Contd*

| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|
| 100 | 100 | 100 | 150 | 150 | 150 | 150 | 150 | 150 |
| 60 | 60 | 110 | 60 | 60 | 60 | 72 | 95 | 60*** |
| 50 | 50 | 50 | 72 | 72 | 72 | 72 | 72 | 72 |
| 120 | 120 | 120 | . | | 90 | 90 | 90 | 90 |
| | | 50 | | | | | | |
| | | 30 | | | | | | |
| 330 | 330 | 460 | 282 | 282 | 372 | 384 | 407 | 372 |
| 270 | 270 | 270 | 36 | 36 | 36 | 36 | 36 | 36 |
| 9 500 | 9 500 | 9 500 | 6 400 | 7 600 | 9 449 | 9 449 | 9 449 | 9 449 |
| 3 000 | 3 000 | 3 000 | 2,000 | 2 000 | 2 000 | 2 000 | 3 000 | 3 000 |
| 2 160 | 2 160 | 2 160 | . | | | 1,200 | 1 200 | 1 200 |
| 1,140 | 1,140 | 1,140 | . | — | | | 600 | 600 |
| | 7 500 | 7 500 | | | | | | |
| 16 070 | 23 570 | 23 570 | 8 436 | 9 636 | 11 485 | 12 685 | 14 285 | 14 285 |
| 300 | 300 | 300 | 120 | 120 | 165 | 300 | 300 | 300 |
| 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| 100 | 100 | 720 | | 600 | 600 | 600 | 600 | 600 |
| 520 | 520 | 1 140 | 240 | 840 | 885 | 1 020 | 1 020 | 1 020 |

***Effective installed capacity reduced because of age of the plant

7.1.3. There is general lack of correspondence betwee the capacities licensed and the capacities claimed to be installe as the following Table would show :

TABLE 7.3

*Particulars of units having installed capacities higher than the licensed capacities for the specified basic drugs*

| Sl. No. | Name of the Basic drug | Name of the unit | Licensed capacity | Installed capacity | Remarks |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Vitamin-A . | (1) Roche Products. | 15 MMU | 20 MMU | .. |
| | | (2) Glaxo Labs. | 10 MMU | 20 MMU | .. |
| 2 | Vitamin-B12 and B12(b) | Merck Sharp | 25 kg. | 64 kg. | .. |
| 3 | Vitamin-C . | Sarabhai Me:ck. | 120 Tonnes | 180 Tonnes | .. |
| 4 | Sulph?diazine . | May & Baker | 90 Tonnes | 110 Tonnes | .. |
| 5 | Penicillin . | Alembic Chemical. | 20 MMU | 50 MMU | .. |
| 6 | Chloramphenicol. | Mac Laboratories. | 0·8 Tonnes | 1·2 Tonnes | .. |
| 7 | Tetracyclines . | Synbiotics . | 3 Tonnes | 4 Tonnes | Licensed capacity has been constant irrespective of the increase in installed capacity. |
| | (a) Iodo-chlor-hydroxy-quinoline. | (1) East India Pharmaceutical. | 6·5 Tonnes | 36·9 Tonnes | .. |
| | | (2) Alembic Chemical | 1 Tonne | 4 Tonnes | .. |
| | | (3) Standard Pharmaceuticals. | 2·5 Tonnes | 6 Tonnes | .. |
| | | (4) Hind Chemicals | 0·6 Tonnes | 0·75 Tonnes | .. |

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| | (b) Di iodo-hydroxy-quinoline | (1) Synbiotics | 5 5 Tonnes | 12 Tonnes | |
| | | (2) Biological Evans | 2 0 Tonnes | 6 Tonnes | |
| 9 | Chlorpropamide | (1) Albert David | 1 0 Tonne | 3 6 Tonnes | |
| | | (2) Pfizer | 1 5 Tonne | 5 Tonnes* | |
| 10 | I N H | (1) Albert David | 3 6 Tonnes | 6 Tonnes | |
| | | (2) Pfizer | 15 6 Tonnes | 33 Tonnes | |
| | | (3) Synbiotics | 27 0 Tonnes | 30 Tonnes | |
| | | (4) Biological Evans | 10 0 Tonnes | 18 Tonnes | |
| 11 | P A S | (1) Biochemical & synthetic Products | 100 0 Tonnes | 150 0 Tonnes | |
| | | (2) Biological Evans | 50 0 Tonnes | 72 00 Tonnes | |

*[Single Shift]

In the final analysis the range of variations between the licensed and the installed capacity is as follows

(a) Drugs for which the units claim installed capacity at a figure up to 25 per cent over the licensed capacity—Three

(b) Drugs for which units claim installed capacity in the range of 25 to 50 per cent above the licensed capacity—Six

(c) Drugs for which units claim installed capacity in the range of 51 to 100 per cent over the licensed capacity—Four

(d) Drugs for which units claim installed capacity between 101 to 200 per cent over the licensed capacity—Four

(e) Drugs for which difference between the installed capacity and the licensed capacity is more than 200 per cent of the installed capacity—Four

7.1.4. In the case of a large number of units the situation is the opposite of what has been discussed above, *i.e.* the installed capacity claimed is substantially lower than the licensed capacity. Particulars in respect of these are as given in Table 7.4

TABLE 7.4

*Particulars of units and drugs for which installed capacities are lower than licensed capacities*

| Drug | Name of Unit | Unit of computation | Installed capacity in 1967 | Licensed capacity in 1967 | Percentage 4 as % of 5 |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Penicillin . . | Hindustan Antibiotics. | MMU | 77 | 84 | 92 |
| Streptomycin . . | Do. | Tonnes | 80 | 90 | 89 |
| Chloramphenicol . . | Parke-Davis . . | ,, | 10 | 20 | 50 |
| | Boehringer-Knoll . | ,, | 12 | 30 | 40 |
| Amodiaquin . . | Albert David . | ,, | 0·6 | 1·0 | 60 |
| Chloroquin . . . | Bengal Immunity . | ,, | 3 | 10 | 30 |
| Iodo-chlo-hydroxy-quinoline. | Atul Products . | ,, | 40 | 41 | 98 |
| I.N.H. . . . | Bengal Immunity | ,, | 10 | 20 | 50 |
| P.A S. . . . | Pfizer . . | ,, | 60 | 110 | 55 |
| | Wander Pharmed . | ,, | 90 | 120 | 75 |
| Tetanus Anti-toxin . . | Bengal Chemical . | MU | 36 | 270 | 13 |
| | Bengal Immunity . | ,, | 9449 | 9500 | 99 |
| | Biological Evans . | ,, | 1200 | 2160 | 56 |
| | Dey's Medical . | ,, | 600 | 1140 | 53 |
| Prednisolone . . . | Wyeth Labs . . | Kgs. | 600 | 720 | 83 |

On the question of the vast disparities between the licensed and the installed capacities, the representative of the D G T D mentioned at the public enquiry that according to the liberalisation policy of the Government, manufacturers were allowed to increase their capacity by 25 per cent Formerly this was done on the condition that they would instal the necessary equipment to increase their capacity and then come forward before the Government for regularisation of the capacity through an applications The request was to be judged by their performance for a period of six months and the capacity was then determined It was also mentioned that there were a number of multi purpose units which produced a number of items and Government did not go into the question of the individual capacities for each item On behalf of the Government of India, Ministry of Petroleum and Chemicals it was stated that when licence is granted, capacity is stipulated, but with the liberalisation of Government policy an increase of 25 per cent over and above the capacity is permitted In certain cases however, it was pointed out that the installed capacity was very much higher—sometimes almost to the extent of 10 times than the licensed capacity It would be observed from the above figures that in the case of all the 22 items in respect of which higher installed capacities have been claimed there are only three items in regard to which the differential between the licensed and the installed capacity is within the range of 25 per cent In the case of the remaining 19 items the range is very much higher The following additional clarifications have in this matter been furnished by the Directorate General of Technical Development —

### Vitamin B-12 and Vitamin B-12(b)

The total licensed capacity is 25 kg while the installed capacity is 64 kg in the case of Merck Sharp and Dohme When the unit approached Government for the regularisation of its increased capacity it was informed that this could be done only if it was prepared to reduce the price Since the unit was not prepared to reduce the price no regularisation of the capacity was made As against the licensed capacity of 25 kgs for both the drugs the unit manufactured 53 6 kgs in the year 1967 It appears that no restrictions were placed in the way of the unit producing more than its licensed capacity The refusal to recognise the *fait accompli* was therefore inconsequential so far as production was concerned Had the unit been subjected to restrictions which would have resulted in its not exceeding the capacity for which it is licensed or at the most 25% over and above the licensed capacity, that is a total of 31 25 kg, it could be considered that

Government's disinclination to increase the capacity owing
the intransigence of the unit in the matter of reduction of pr
bore fruit, but in the present case it was not possible to disc
any advantage that may have resulted from this approach.

*Vitamin C.*—The licensed capacity of Sarabhai Merck
120 tonnes while the installed capacity is 180 tonnes. When thi
discrepancy was brought to the notice of Government it wa
stated that the capacity has been regularised at 120 tonnes per annum. The question therefore remains unanswered and the discrepancy remains.

*Penicillin.*—Alembic Chemical claimed an installed capacity of 50 MMU as against a licensed capacity of 20 MMU. The D.G.T.D. has mentioned that the production of Penicillin by this unit was well above the licensed capacity and this was helpful in meeting the increasing demand. Notwithstanding this, the party was told that keeping in view the total capacity of the manufacturer and the fact that licences were held both in the public and private sector against requirements by the end of the Fourth Plan period, in regard to the progress of the licensed units, it was not possible to regularise the additional capacity, Government would however have no objection to the additional production over and above the licensed capacity being exported. This presents certain very complicated issues with regard to the licensing of capacities. On the one hand it is recognised that the installed capacity of the unit was higher than that licensed; it is also stated that this no doubt proved
o be helpful in meeting the increasing demand. But it has
een simultaneously stated that it was not possible to recognise
his fact. Yet another facet of the issue is that Government would
e willing to recognise the installed capacity if the unit were
export. The provisions of the Industries (Development
d Regulation) Act require that as and when with the permission
he Government, a unit increases its capacities, the necessary
dification should be made in the licence. It is therefore neces-
that prior permission of the licensing authority should be
lable before any increase in the nstalled capacity is made.
is done without prior permission there ought to be certain
ties attached which may have the effect of restricting the
ction of the unit to the limit fixed by the licence. The
purpose of the licensing of units at certain capacities would
feated, if these principles were not kept in mind and such
es were introduced into the implementation of the pro-
of the Act as,

(a) the recognition of the advantages that accrue as a result of the increase in the capacity,

(b) inability to recognise something which is a *fait accompli* and for which the unit has not been penalised,

(c) offer to recognise if certain other conditions which are extraneous to the provisions of the law were satisfied

In the case of this unit as against the licensed capacity of 20 MMU the production in 1966 was 51 MMU.

*Chlorpropamide*—Pfizer produced 12 21 tonnes of this product in 1966 It claims an installed capacity of 5 tonnes and the licensed capacity is only 1 5 tonnes The clarification received from Government on this discrepancy was that the proposal of the unit for expansion of its capacity for manufacture was not approved as its output was not up to the licensed capacity, and it was suggested to it that it can submit its proposal for expansion after it had been able to fully utilise the licensed capacity for at least a period of one year This introduces a new feature in the matter of licensing of capacities While the D G T D recognised that the proposal was for expansion of capacity for the same product, it mentioned that such expansion is allowed only if it becomes a *fait accompli* and the performance justified the expansion This would mean that if the unit is allowed to increase the capacity and show higher production and then is asked to come up to Government for the regularisation of its higher capacity, Government then have the choice to recognise it or to refuse recognition, subject to the diverse criteria adopted by Government in such matters If the expansion is refused the unit does not stand to lose anything It goes on producing at the higher rate and most probably it continues to get the necessary foreign exchange for raw material Licensing of units for capacities is thus likely to be rendered infructuous On the other hand if Government were to deter the unit from increasing its production the outlay on expansion would be a dead loss

*P A S*—Biochemical & Synthetic has a licensed capacity of 100 tonnes and an installed capacity of 150 tonnes In this case production was well below the licensed capacity and the D G T D has held that no explanation for recognising of the additional installed capacity was necessary The same was considered to hold good for Biological Evans even though its production was only 54 3 tonnes in 1967 as against the licensed capacity of 50 tonnes

7.1.6. In the case of the items for which licensed capacities are substantially higher than the capacities installed, no comments from the D.G.T.D. or the Government are available. It appears that the units have failed to establish the necessary capacities even though the licenses for higher quantities were issued in their favour. An examination of the figures of production also confirms this view since in almost all cases the production has not exceeded the installed capacities. While it would be desirable to recognise the higher installed capacities where these have been established, it would be equally advisable to reduce licensed capacities where these have not been set up within the period stipulated for installation. This would be conducive to a more healthy growth of the industry and would lead to more scientific assessment of the requirements of the industry particularly in regard to foreign exchange and the size of other supporting industries producing raw materials.

7.1.7. In the case of certain units even though capacities have been licensed, plant and machinery has not been installed. Examples are as follows :—

*Vitamin C.*—Hindustan Antibiotics was licensed for a capacity of 50 tonnes in 1961 and this licence was raised to 125 tonnes in 1966, but no capacity has so far been installed. The unit has informed that it is designing the plant for the process evolved by the National Chemicals Laboratory, Poona. It is a long time since 1961 for the unit to be in the experimental stage and it is not known how long it will continue to be so.

*Chloramphenicol.*—Neo Pharma and Dey's Medical have been licensed for 3.6 and 18 tonnes in 1960 and 1962 respectively but they have not installed their capacities yet. In the case of Neo Pharma there is patent litigation on account of which production has not been started; Dey's Medical expects to commence production in 1969.

*Chlorquin.*—May & Baker has been licensed for 12 tonnes in 1963. No. reasons have been furnished by May & Baker for not establishing the capacity.

*Chloropropamide.*—Kemp and Co. was licensed for 0.1 tonne in 1962 but it has not set up its capacity for production and has stated it has no such programme in the near future.

*I N H*—Three units have been licensed in 1967 and understandably they have not yet set up their capacities But in the case of two units namely IDPL (Hyderabad) and Warner Hindustan both licensed in 1962, production is expected to begin in September 1968 and by the end of 1968 respectively

*P A S*—South India Research Institute and Chemo Pharma have been licensed in 1967 for 50 and 30 tonnes respective and they are taking steps to instal their capacity

*Tetanus Anti toxin*—Chowgule was licensed in 1966 for 7500 MU No definite date has been given when the capacity would be set up

It is apparent from the examples we have given that in the drugs and pharmaceuticals industry as in many other industries, on the one hand quite a number of licences issued for installation and expansion have remained dormant on the other there are numerous cases where installed capacity has exceeded the licensed capacity and been permitted to so exceed with *ex post facto* approval in selected instances on the ground of increased production achieved and refusal in others We are unable to see any uniform or firm policy at work in this regard The Industries (Development and Regulation), Act has been in operation for a fairly long time and it seems to us that it will be opportune to make a thorough review of the working of the Act and the rules and actual procedures adopted in granting the licenses and approval or disapproval of changes in capacity from time to time

7 1 8 *SMALL SCALE SECTOR*—In the small scale sector there are only three drugs, Iodo-chlor hydroxy quinoline/ Di iodo hydroxy quinolone I N H and P A S for which licences for manufacture have been issued by the respective State Drug Control authorities The capacities licensed as well as installed have been given by the units It is not possible to make any verification with regard to capacities actually licensed for the reason that even though the provisions of the Drugs Cosmetics Act and the Rules made thereunder are comprehensive, these do not stipulate capacities when licences are given Section 18(c) of the Act requires licence to be obtained for the manufacture of drugs, application for licence has to be furnished in forms prescribed under the rules, licences are given in prescribed forms and forms are also prescribed for the renewal of licence These forms provide for the categories and names of drugs only, but do not mention the

capacity. Under Schedule M there are detailed conditions with regard to the factory premises and the installations to be made therein. But here again no mention is made of the capacity. Rules also provide for special and well qualified laboratory personnel. The capacity for which the manufacture of the drug is allowed has been, it appears, inadvertently omitted. It is therefore not possible to discuss the question of capacity, either licensed or installed, in so far as small scale sector units are concerned. We suggest however that suitable additions may be made to the relevant rules.

## 7.2. Capacity in respect of formulators :

7.2.1. One of the terms of reference requires the Commission to inquire whether the selling prices can be reduced for the essential formulations of the specified drugs. Formulations both for single as well as multiple drugs are numerous. Since the selection was left to us with the help of the experts appointed to assist us, we selected 39 single drug and 30 multiple drug formulations of the various specified drugs, which are considered as essential formulations. These formulations are manufactured both by the units in the large scale as well as by those in the small scale sector.

7.2.2. While demand for basics drugs is derived from that of formulations, that of formulations depends on the consumer requirements since basic drugs are consumed only through and in the form of formulations. The manufacturing activity of formulators is essentially different from that of basic drugs. Basic drug manufacture follows principles and procedures of fine chemicals while in the case of formulations the processes involved are simplar and consist of tabletting, dilution, mixing and packing. Once we had decided upon the number of formulations to be included in the purview of our inquiry, we proceeded to ascertain the particulars of the licensed manufacturers of formulations. In the case of formulators in the large scale sector the data were readily available from the D. G. T. D. but for the small scale sector the only source of information are the State Drugs Controllers and data were sadly lacking. Of the 118 drug manufacturers registered with the D.G.T.D., 30 are producers cum-formulators, that is, those who produce one or more of the specified basic drugs and also formulate these drugs. Twenty eight units are only formulators of the specified basic drugs. They may or may not be producers of other basic drugs which are outside the purview of our inquiry.

7.2 3 The D G T D has stated that the formulating activity of the pharmaceutical industry covers a wide range of formulations which can be produced within the overall capacities installed by the formulators for the various preparations, according to their application in the form of injectable ampoules vials, capsules, tablets, powders, suspension granules and ointments etc, and that the capacities with production statistics of individual formulators are not maintained It has therefore not found it practicable, to furnish capacity and production statistics for individual, single and multiple drug formulations selected by the Commission The D G.T D has observed that production, availability and consumption of bulk drugs is a guiding and controlling factor of the output of subsequent formulations and that the capacity for individual formulations is not of much importance The licensed capacities were therefore not with regard to drugs and their quantities but by forms of preparations The capacity is thus licen d for these categories and not for drugs

7 2 4 Unde the provisions of Rules 69A 70A, 74A and 75A of the Drugs and Cosmetics Rules, the licensing authority may issue a loan licence for the manufacture of formulations and an applicant who does not have his own arrangemant for manufacture may avail of the arrangements available with another licencee with an installed capacity for formulations When a number of formulators are housed in the same premises some of them may have licensed and installed capacity for formulations while others may depend on the former on the basis of loan l cences Some of the units who do not have their own formulating capacity and manufacture their formulations through loan licensees are Boehringer Knoll, Neo-Pharma, Indo French Pharmaceutical Co, Madras, Duggan Laboratories, Bombay and Sarpin Pharmaceutical, Bombay

7 2 5 For the reasons already stated unitwise licensed or installed capacity for the essential formulations selected by us cannot be given Again many of the units formulate drugs other than those specified for the purpose of our inquiry and the capacity for capsuling tabletting etc that is available to them may not necessarily be restricted to the utilisation for the specified basic drugs which are formulated by them However on the basis of replies received, the total licenced and installed capacities for different application and preparation of the drugs and formulations are given in Table 7 5

TABLE 7.5

*Total licensed and installed capacities for various types of preparations of the large scale units which formulate the specified drugs*

| Sl No | Name of the unit | Year of grant of licence | Description of preparation or application | Capacity in 1967 | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | Unit | Licensed | Installed | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | *(A) Manufacturers of basic durgs who are also formulators* | | | | | | |
| 1 | Alembic Chemical | 1952 | Injection<br>Capsules<br>Ointment | Lac Vials<br>Million Nos.<br>Kgs. | 60<br>600<br>7200 | 60<br>600<br>7200 | Separate for each injection. Common for tablets also. |
| 2 | Bengal Immunity | 1960 | Injection | Million Vials | 36,000 | 36,000 | For insulin only. |
| 3 | Biological Evans | 1966 | Capsules<br>Tablets<br>Granules | Million lits.<br>Million Nos.<br>Tonnes | 0 02<br>60<br>120 | 0 02<br>60<br>120 | |
| 4 | Boehringer-Knoll | No capacity for formulations. | | Formulations are manufactured on loan licence at Rallis India and Capsulation Services. | | | |
| 5 | Boots | 1952 | Injection<br>Tablets<br>Ointment | 1000 lits.<br>Million Nos.<br>In '000 Kg. | 480<br>360<br>120 | 480<br>360<br>480 | Licensed / Installed capacity can be extended 3 times according to demand in market and availability of raw materials |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | Brahmachari Res Inst | 1952 | — | — | — | — |
| 7 | Chemo-Pharma | 1952 | Tablets | Million Nos. | 90 | 90 |
| 8 | Cyanamid | — | Capsules | Do. | 3 4 | 45 |
| | | | Tablets | Do | — | 62 |
| 9 | East India | — | Tablets | Kgs | 12300 | 12300 |
| 10 | Glaxo Lab | 1952 | Injections | Million Vials | — | 36 |
| | | | Tablets | Million Nos | — | 720 |
| 11 | Haffkine | No capacity for formulations | | | | |
| 12 | Hind Chemicals | — | Tablets | Kgs. | 600 | 750 |
| 13 | Hindustan Antibiotics | — | — | — | — | — |
| 14 | Hoechst Pharmaceuticals | — | Injection | Million Vials | 3 | 7 5 |
| | | | Capsules | Million Nos. | 0 81 | 12 |
| | | | *Tablets* | *Do* | 3 5 | — |
| | | | Granules | Million Kgs | 0 04 | 0 02 |
| 15 | Mac Labs | | Capsules | Kgs. | 1200 | 1200 |
| 16 | May & Baker | — | Injection | Million Lits. | 0 12 | 0 12 |
| | | | Capsules | Million Nos | 2 | — |
| | | | Tablets | *Do* | 1644 | 1644 |
| | | | Ointment | Kgs | 120 | — |
| 17 | Merck Sharp | | Injection | Million Vials | 0 04 | 0 04 |

TABLE 7·5—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 18 | Parke-Davis . . | .. | Ointment | Million Kgs. | 0·02 | 0·01 | |
| 19 | Pfizer . . . | 1952 | Injection | Lits. | 36000 | 36000 | |
| | | | Capsules | Million Nos. | 30 | 30 | |
| | | | Tablets | Do. | 540 | 540 | |
| 20 | OPIL . . . | ... | Injection | Million Vials | 4·95 | 4·95 | |
| | | | Capsules | Million Nos. | 0·02 | 0·02 | |
| | | | Tablets | Million Nos. | 165 | 165 | |
| | | | Ointment | Kgs. | 45·4 | 45·4 | |
| 21 | Roche Products . | ... | Injection | Lits. | 9244 | 28980 | |
| | | | Tablets | Million Nos. | 178 | 544 | |
| | | | Ointment | Kgs. | 240 | 12726 | |
| 22 | Standard Pharmaceuticals. | 1952 | Tablets | Million Nos. | 36 | 36 | |
| 23 | Unichem Labs. . . | 1960 | Tablets | Kgs. | 3000 | N.A. | |
| 24 | Wander Pharmed . | 1961 | Tablets | Tons. | 90* | 90* | *Common for tablets and granules. |
| 25 | Wyeth Labs. . . | 1960 | Tablets | Kgs. | 100 | 600 | |
| 26 | Dey's Medical . . | 1959 | Injection | Million Vials | 3·1 | 10 | |
| | | | Capsules | Million Nos. | 18 | 50 | |
| | | | Tablets | Millions Nos. | 600 | 800 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 27 | Calcutta Chemical | 1957 | Tablets | Kgs | 1854 5 | N A. | |
| | | | | *(B) Other formulators (Large Scale)* | | | |
| 1 | Anglo-French | 1955 | Injection | Lits | 12000 | 12000 | |
| | | | Tablets | Million Nos. | 158 4 | 158 4 | |
| | | | Ointment | Kgs. | 12600 | 12600 | |
| 2 | Bayer | 1962 | Tablets | Million Nos | 16 | 60 | For all tablets. |
| 3 | British Drug House | 1959 | Injection | Lits | 81000 | 64000 | |
| 4 | Burroughs Wellcome | 1964 | Injection | Lac Vials | 7 | 7 | |
| | | | Tablets | Million Nos | 186 | 186 | |
| 5 | CIPLA | - | Injection | Million Vials | — | 7 2 | |
| | | | Capsules | Million Nos | — | 3 6 | |
| | | | Tablets | Million Nos | — | 224 | |
| 6 | CIBA | 1952 | Tablets | Mil | 396 | 396 | |
| | | | Ointment | Tons | 106 | — | |
| 7 | Cilag Hind | | Tablets | Million Nos | — | 8 | |
| | | | | Tonnes | — | 120/144 | |
| 8 | Crookes Interfran | 1962 | Tablets | Million Nos. | 192 | 192 | |
| | | | Granules | Kgs. | — | 1 56 | |
| 9 | Fairdeal | | Injection | Lits. | — | 25700 | |
| | | | Granules | Kgs. | — | 25700 | |
| | | | Capsules | Million Nos | — | 3 9 | |

TABLE 7·5—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 10 | Geoffrey Manners . | 1952 | Injection | Million Vials | 0·3 | 4·5 | Injection for Wyocobin only. |
| | | | Capsules | Million Nos. | 9·0 | 11·4 | Capsules for Vitamycetin only. |
| | | | Tablets | Do. | 3·6 | 648 | Tablets for Wyocobin only. |
| 11 | Indo-Pharma . . | | Injection | Million Vials | 8·7 | – | |
| | | | Tablets | Million Nos. | 250 | – | |
| | | | Granules | Kgs. | 1800 | – | |
| | | | Ointment | Kgs. | 10000 | – | |
| 12 | Indian Health Institute | No licensed capacity | Tablets | Million Nos. | ... | 1·8 | |
| 13 | Indian Research Institute. | ... | ... | – | ... | ... | |
| 14 | Kemp & Co. . . | 1952 | Injection | Million m.u. | 1·3 | 1·3 | |
| | | | Tablets | Million Nos. | 13·8 | 13·8 | |
| | | | Ointment | Kgs. | 24000 | 24000 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | Khandelwal Labs | N A | Capsules | Million Nos. | — | 3 6 | |
| | | | Tablets | Do | — | 105 | |
| | | | Granules | Kgs | — | 11,000 | |
| 16 | Laboratories Grimault | . | Unrestricted Injection | Lits | — | 6000 | |
| 17 | Martin & Harris | 1961 | Tablets | Million Nos. | 210 | 2520 | |
| | | | Injection | Do. | — | 18 | |
| | | | Ointment | Lbs. | — | 18000 | |
| 18 | Neo Pharma . . | 1963 | Tablets | Million Nos. | 36 } 11 990 } | — | Manufacturing on loan licence—hence no installed capacity |
| 19 | Rallis India | 1952 | Injection | Lits | *61 2 | **57000 | *For Vitamin B12 only **For all injectibles |
| 20 | Sarabhai Chemicals | | Injection | Million Nos | 62·2 | 48 6 | |
| | | | Capsules | Million Nos | 20 8 | 18 | |
| | | | Tablets | Million Nos | 310 | 300 | |
| 21 | Smith Stanistreet | | Injection | Lac lit | 1 03 | 0 132 | |
| | | | Tablets | Million Nos | 498 | 303 | |
| | | | Powder | Lac Kgs | 4 40 | — | |
| | | | Ointment | Kgs | 2160 | — | |

TABLE 7·5—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 22 | South India Res. Inst. | 1959 | Injection | Million ml. | 150 | .. | |
| | | | Tablets | Million Nos. | 140 | .. | |
| 23 | Spencer & Co. | .. | N.A. | N.A | N.A. | N.A. | |
| 24 | Standard Pharmaceuticals. | .. | Capsules | Lakh Nos. | 1·44 | 1·44 | |
| 25 | Therapeutic Pharmaceuticals. | 1967 | Injection | No. of Vials | 37500 | Lit. 500 | |
| | | | Tablets | Million Nos. | 9 | 10 | |
| | | | Granules | Kgs. | 750 | 1000 | |
| 26 | U. S. Vitamin | 1957 | Injection | Lacs Vials | 5·8 | 6·0 | |
| | | | Capsules | Million Nos. | 6·6 | 12·0 | |
| | | | Tablets | Do | 5·4 | 5·0 | |
| 27 | Zandu | .. | Injection | Lacs Vials | .. | 1·0 | |
| | | | Tablets | Lac Nos. | .. | 5·0 | |
| | | | Powder | Kg. | .. | 360 | |
| | | | Ointment | Kg. | .. | 130 | |

TABLE 7·5—*Contd.*

| Sl No | Name of the formulator | Description of preparation application | Unit | Capacity in 1967 | |
|---|---|---|---|---|---|
| | | | | Licensed | Installed |
| 1 | 2 | 3 | 4 | 5 | 6 |
| | *(C) Total licensed and installed capacities of small scale formulators* | | | | |
| 1 | Binichem Labs., Bombay | Capsules | Million Nos. | .. | 25 0 |
| | | Tablets | Do. | — | 73 6 |
| 2 | Cadila Labs., Ahmedabad | Injection | Lits. | .. | 3000 |
| | | Capsules | Lakh Nos. | .. | 2 5 |
| | | Tablets | Million Nos. | .. | 6·5 |
| | | Liquid | Lits. | — | 10000 |
| 3 | Duggan Labs., Bombay | Loan licence basis | | | |
| 4 | Franco-Indian Mfg. Ltd., Bombay | *Injection* | *Lits* | — | 6000 0 |
| | | Tablets | Million Nos | — | 75 |
| | | Granules | Kgs. | — | 15000 |
| | | Ointment | Million Tubes | — | 1 0 |
| 5 | Flora Pharma, Kanpur | Capsules | Lac Nos. | — | 61 |
| 6 | G D A Chemicals, Calcutta | Injection | Lits. | — | 10720 |
| | | Tablets | Kgs | — | 10000 |

TABLE 7·5—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 7 | Lyovak Labs., Bombay | Capsules | Million. Nos. | 6 | 6 |
| | | Ointment | Million Tubes | 6 | ... |
| 8 | Lyka Labs, Bombay | Capsules | Lac Nos. | ... | 1·27 |
| | | Tablets | Million Nos. | .. | 14·0 |
| | | Ointment | Million Tubes | ... | 13·7 |
| 9 | Navarathna Pharmaceuticals, Cochin | Tablets | Kgs. | .. | 3600/6000 |
| 10 | Orissa Red Cross Blood Bank, Cuttack | Capsules | Lakh Nos. | 1 | ... |
| 11 | Pharma-Chem Mfg. Corporation, Bombay | Tablets | Million Nos. | 6·6 | 6·6 |
| | | Liquid | Million bottle | .. | 500 |
| 12 | Royal Labs, Hyderabad | No licensed capacity | Do not come under I.D. & R.I. | | |
| | | Tablets | Million Nos. | .. | 66 |
| 13 | Syntho Pharma, Pvt. Ltd., Delhi | Capsules | Million Nos. | .. | 2·4 |
| | | Tablets | Do. | .. | 36 |
| | | Powder | Kgs. | .. | 9000 |
| 14 | Shetty's Pharmaceutical and Biological Ltd., Hyderabad. | Injection | Lits. | ... | 13200 |
| | | Tablets | Million Nos. | .. | 49.5 |
| | | Liquid | Lits. | .. | 26400 (Orals) |
| 15 | Sarpin Pharmaceuticals, Bombay | ... | ... | .. | ... |

7 2 6 Even though there are 381 units in the small scale sector which manufacture formulations we received replies to our questionnaire from 281 units only and of these a mere 15 gave particulars of capacity Since formulating activity in the small scale sector is very limited the lack of response and data do not detract to any substantial degree the evaluation of the total formulating activity in the country

7 2 7 In the case of the large scale manufacturers the units which manufacture one or more of these formulations have been covered by the survey but the position is indefinite in so far as the small scale sector manufacturers of the formulations are concerned since out of a total of 381 formulators in this sector data were furnished to us by 281 units The survey of formulators in so far as the small scale sector is concerned is thus limited to the 281 units Of the 281 units in the small scale sector of which we have names four are producers cum formulators and the remaining 277 are only formulators of the specified drugs Appendix VII gives the names of the producers cum formulators and formulators in the large as well as small scale sectors together with the particulars of the selected single and multiple drug formulations manufactured by each The particulars of the formulating units in the large and small scale sector in each State for which we have collected the necessary data are given in Table 7 6

TABLE 7 6

(A) *Number of formulating units which manufacture single drug formulations of the specified drugs*

| Sl No | Name of the specified drug | Number of the formulating units | | |
|---|---|---|---|---|
| | | Large Scale | Small Scale | Total |
| 1 | 2 | 3 | 4 | 5 |
| 1 | Vitamin A | 7 | 60 | 6 |
| 2 | Vitamin B 12 | 28 | 112 | 140 |
| 3 | Vitamin C | 32 | 91 | 123 |
| 4 | Sulphadiazine | 14 | 70 | 84 |

TABLE 7·6—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 5 | Penicillin . . . . . | 24 | 9 | 33 |
| 6 | Streptomycin . . . . | 11 | 6 | 17 |
| 7 | Chloramphenicol . . . | 11 | 45 | 56 |
| 8 | Tetracyclines . . . . | 17 | 41 | 58 |
| 9 | Amodiaquin . . . . | 2 | 1 | 3 |
| 10 | Chloroquine . . . . | 7 | 14 | 21 |
| 11 | Iodo-chlor-hydroxy-quinoline . | 18 | 48 | 66 |
| 12 | Chlorpropamide . . . . | 4 | 4 | 8 |
| 13 | Tolbutamide . . . . | 6 | 5 | 11 |
| 14 | Insulin . . . . | 13 | 1 | 14 |
| 15 | INH . . . . . | 10 | 42 | 52 |
| 16 | PAS . . . . . | 17 | 22 | 39 |
| 17 | Tetanus Anti-toxin . . . | 6 | 2 | 8 |
| 18 | Prednisolone . . . | 16 | 25 | 41 |

NOTE.—Totals have not been given since many of the drugs are being formulated by the same unit.

(B) *Number of formulating units which manufacture multiple drug formulations of the specified drugs*

| Sl. No. | Name of the drugs in the formulation | Number of formulating Units | | |
|---|---|---|---|---|
| | | Large Scale | Small Scale | Total |
| 1 | 2 | 3 | 4 | 5 |
| 1 | Combinations of different forms of Penicillin . . . . . | 2 | .. | 2 |
| 2 | Combinations of different forms of streptomycin . . . . . | 5 | 1 | 6 |
| 3 | Penicillin and Streptomycin . . | 6 | .. | 6 |

TABLE 7 6—*Contd*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 4 | Chloramphenicol & Tetracyclines . | 3 | 1 | 4 |
| 5 | Chloramphenicol & Streptomycin . | 6 | 6 | 12 |
| 6 | Iodo-chlor-hydroxy-quinoline and Chloroquin . . | 5 | 1 | 6 |
| 7 | Tetracyclines & Vitamins . | 1 | . | 1 |
| 8 | I.N.H and P A S . . . . | 16 | 11 | 27 |
| 9 | Combinations of Vitamins . . | 4 | 26 | 30 |
| 10 | Iodo-chlor-hydroxy-quinoline and Chloramphenicol . | .. | 1 | 1 |
| 11 | I.N.H and Vitamins . . . . | . | 3 | 3 |
| 12 | P.A S and vitamins . . . . | .. | 1 | 1 |
| 13 | Vitamin, I.N.H. and P A S . | .. | 1 | 1 |

# CHAPTER 8

## PRODUCTION AND UTILISATION OF CAPACITY

### 8.1. Production of basic drugs :

8.1.1. Production during the last six years for each of the specified basic drugs by the various units, both in the large scale as well as small scale sectors, is given in Table 8.1 :

TABLE 8.1

*Unitwise installed capacities and production of each specified basic drug*

| Sl. No. | Basic Drug and Name of the units | Unit of measurement | Installed capacity In 1962 | In 1963 | In 1964 | In 1965 | In 1966 | In 1967 | Year of commencement of production | Production In 1962 | In 1963 | In 1964 | In 1965 | In 1966 | In 1967 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 1 | *Vitamin—A* | | | | | | | | | | | | | | |
| | 1. Roche Products . | MMU | 20 | 20 | 20 | 20 | 20 | 20 | 1959 | 12.9 | 15.2 | 16.0 | 15.7 | 14.3 | 14.6 |
| | 2. Glaxo Labs. . | ,, | 20 | 20 | 20 | 20 | 20 | 20 | 1958 | 7.1 | 4.1 | 6.7 | 8.8 | 7.1 | 9.2 |
| | | | 40 | 40 | 40 | 40 | 40 | 40 | | 20.0 | 19.3 | 22.7 | 24.5 | 21.4 | 23.8 |
| 2(a) | *Vitamin B-12* | | | | | | | | | | | | | | |
| | (1) Merck Sharp . | Kg. | 23 | 25 | 40 | 10 | 40 | 40 | 1959 | 16.7 | 25.0 | 21.3 | 27.[illegible] | | |
| | (2) Synbiotics . | ,, | .. | .. | .. | .. | .. | .. | .. | .. | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) Themis Pharmaceuticals | . | | | . | | | 12 | 1967 | | | | | | 10 3 |
| | ,, | 25 | 25 | 40 | 40 | 40 | 52 | | 16 7 | 25 9 | 21 3 | 27 2 | 41 8 | 53 7 |
| 1) [illegible] B [illegible] | | | | | | | | | | | | | | |
| (1) Merck Sharp | K | 24 | 24 | 24 | 24 | 24 | 24 | 1962 | 3 [illegible] | 5 3 | 0 5 | 7 9 | 10 3 | 10 2 |
| (2) Glaxo Labs | ,, | | 5 | 5 | 6 | 6 | 6 | 1963 | | 1 3 | | 0 5 | 2 1 | 1 5 |
| | | 24 | 29 | 29 | 30 | 30 | 30 | | 3 9 | 6 [illegible] | 8 5 | 8 4 | 12 4 | 11 7 |
| 3 [illegible]—C | | | | | | | | | | | | | | |
| Sarabhai Merck | Tonnes | 60 | 63 | [illegible] | 90 | 150 | 180 | 1971 | 31 0 | 62 0 | 78 0 | 90 0 | 131 0 | 77 0 |
| | | 60 | 65 | [illegible] | 90 | 150 | 180 | | 31 0 | 62 0 | 78 0 | 90 0 | 131 0 | 77 0 |
| 4 Sulphadiazine | | | | | | | | | | | | | | |
| (1) Atul Products | Tonnes | 83 | 83 | 83 | 83 | 83 | 83 | 1952 | 31 5 | 51 7 | 32 5 | 61 8 | 12 4 | [illegible] 1 |
| (2) May & Baker | | 35 | 35 | [illegible]5 | 110 | 110 | 110* | 1955 | 12 7 | 25 4 | 24 2 | 43 9 | 65 0 | 43 9 |
| | | 118 | 118 | 118 | 193 | 193 | 193 | | 44 2 | 80 1 | [illegible]6 7 | 107 7 | 77 4 | 43 9 |
| 5 Penicillin | | | | | | | | | | | | | | |
| (1) Hindustan Antibiotics | MMU | 4 | [illegible]4 | 60 | 75 | 77 | 77 | 1954 | 40 6 | [illegible]8 8 | 53 [illegible] | 53 4 | 63 2 | 59 6 |
| (2) Alembic Chemical | | 10 | 10 | 20 | 23 | 50 | 50 | 1959 | 6 5 | 12 1 | [illegible]0 4 | [illegible]3 0 | 51 0 | 23 9 |
| (3) Standard Pharmaceuticals | | 10 | 10 | 10 | [illegible]0 | 20 | 20 | 1962 | 5 8 | 13 5 | 14 0 | 16 1 | [illegible]6 7 | 33 1 |
| | | [illegible] | [illegible] | [illegible] | 1[illegible]3 | 14 | 14 | | 5[illegible] 9 | [illegible] 1 | [illegible] 1 | 10[illegible] 5 | [illegible] | [illegible] |

* [illegible] capacity for Sulphadiazine. Total installed capacity for all drugs is 210 tonnes but effective operational capacity is only 175 tonnes

TABLE 8·1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | *Streptomycin* | | | | | | | | | | | | | | |
| | (1) Hindustan Antibiotics | Tonnes | — | 10 | 10 | [illegible] | [illegible] | [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | (2) Synbiotics | " | — | 15 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | | — | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | — | 25 | [illegible] | 120 | [illegible] | 120 | | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 7 | *Chloramphenicol* | | | | | | | | | | | | | | |
| | (1) Parke-Davis | Tonnes | 10 | 10 | 10 | 10 | 10 | [illegible] | [illegible] | | [illegible] | [illegible] | 11 | 11.1 | 11.9 |
| | (2) Boehringer-Knoll | " | 3 | 3 | 12 | 12 | 12 | 12 | [illegible] | | [illegible] | 13.5 | [illegible] | 12.5 | [illegible] |
| | (3) Max Labs | " | — | — | 1.2 | 1.2 | 1.2 | 1.2 | [illegible] | | — | [illegible] | [illegible] | [illegible] | — |
| | | | 13 | 13 | [illegible] | [illegible] | [illegible] | [illegible] | | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 8 | *Tetracyclines* | | | | | | | | | | | | | | |
| | (1) Pfizer | Tonnes | 5 | 5 | 10 | 10 | 10 | 10 | [illegible] | [illegible] | [illegible] | [illegible] | 5 | [illegible] | [illegible] |
| | (2) Cyanamid | " | 10 | 10 | 10 | 10 | [illegible] | 10 | [illegible] | 12.6 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | (3) Hindustan Antibiotics | " | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | (4) Synbiotics | " | 1.5 | 1.5 | 1.5 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | | | 13.0 | 13.0 | [illegible] | [illegible] | [illegible] | [illegible] | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | | | | | | | | | | | | | | |
| | (1) Parke-Davis | Tonnes | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | 11.2 | 11.1 | 11.3 | |
| | (2) Albert David | " | 0.6 | 0.6 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |
| | | | 6.6 | 6.6 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | 13.0 | [illegible] | [illegible] | [illegible] | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 *Chloroquin* | | | | | | | | | | | | | | |
| Bengal Imm in ty | T nnes | 1.1 | 1.1 | 1.3 | 3.0 | 3.0 | 3.0 | 1956 | 1.1 | 1.1 | 1.2 | 2.4 | 2.8 | 3.4 |
| | | 1.1 | 1.1 | 1.3 | 3.0 | 3.0 | 3.0 | | 1.1 | 1.1 | 1.2 | 2.4 | 2.8 | 3.4 |
| *Iodo-Chlor Hydroxy-Quinoline* | | | | | | | | | | | | | | |
| (i) *Large Scale Units* | | | | | | | | | | | | | | |
| (1) Albert David | Tonnes | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 1951 | 0.6 | 0.5 | 0.2 | 0.3 | 0.9 | 0.7 |
| (2) Alembic Chemical | ,, | 4.0 | 4.0 | 4.0 | 1.0 | 4.0 | 4.0 | 1957 | 1.1 | 2.9 | 3.7 | 4.7 | 1.9 | Nil |
| (3) Atul Products | ,, | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 1956 | 16.0 | 28.1 | 25.9 | 24.0 | 41.2 | 19.2 |
| (4) Bengal Chemical | ,, | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1942 | 0.5 | 0.6 | 0.9 | 0.7 | 0.8 | 0.3 |
| (5) Brahmachari Research Institute | ,, | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1943 | 0.4 | 0.6 | 0.7 | 0.5 | 0.6 | 0.4 |
| (6) East India Pharmaceutical | ,, | 36.9 | 36.9 | 36.9 | 36.9 | 36.9 | 36.9 | 1941 | 14.5 | 14.7 | 19.3 | 21.3 | 22.1 | 24.7 |
| (7) Hind Chemicals | ,, | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 1960 | 0.6 | 0.5 | 0.4 | 0.5 | 0.4 | 0.5 |
| (8) Standard Pharmaceutical | ,, | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 1959 | 0.7 | 1.4 | 1.5 | 1.6 | 1.1 | 1.0 |
| | | 93.7 | 93.7 | 93.7 | 93.7 | 93.7 | 93.7 | | 34.2 | 49.1 | 52.6 | 53.2 | 68.8 | 47.4 |
| (ii) *Small Scale Units* | | | | | | | | | | | | | | |
| (1) G D A Chemicals | Tonnes | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 1948 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| (2) Neogy Labs | ,, | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 1958 | 3.2 | 4.9 | 5.5 | 5.8 | 6.5 | 8.9 |
| (3) Syno-Chem | ,, | — | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 1963 | — | 0.3 | 0.1 | 1.1 | 1.6 | 1.1 |
| (4) Alliance Trading | ,, | — | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 1963 | — | 5.9 | 5.1 | 6.2 | 7.4 | 10.2 |
| (5) Sunny Industries | ,, | — | — | — | 4.0 | 4.0 | 4.0 | 1965 | — | — | — | 1.1 | 0.4 | 1.3 |
| (6) Swiss Chemicals | ,, | — | — | — | 15.6 | 15.6 | 15.6 | 1965 | — | — | — | 0.3 | 0.5 | 0.5 |
| (7) Eagle Labs | ,, | — | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 1965 | — | 0.2 | 0.8 | 0.5 | 1.9 | 1.3 |
| (8) British Medicine | ,, | — | — | — | 3.6 | 3.6 | 3.6 | 1965 | — | — | — | 0.2 | 0.7 | 0.9 |
| | | 12.7 | 34.0 | 34.0 | 57.2 | 57.2 | 57.2 | | 3.4 | 11.5 | 11.7 | 15.4 | 18.2 | 24.4 |

# TABLE 8·1 —Contd.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B. *Di-Iodo-Hydroxy-Quinoline* | | | | | | | | | | | | | | |
| | (i) *Large Sale Sector* | | | | | | | | | | | | | | |
| | (1) East India Pharmaceutical . | Tonnes | | | | | | | | | | | | | |
| | (2) Bengal Chemical | ,, | (Capacity included in that of Iodo-Chlor) | | | | | | | 0 5 | 0 5 | 1.4 | 1.7 | 3.0 | 3.9 |
| | (3) Brahmachari Research Institute | ,, | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 1942 | 0.04 | — | — | — | 0.04 | 0.03 |
| | (4) Albert David . | ,, | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 1943 | 0.05 | 0.08 | 0.04 | 0.07 | 0.04 | 0.02 |
| | (5) Synbiotics . | ,, | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 1945 | 1.3 | 2.0 | 0.7 | 1.7 | 1.5 | 1.4 |
| | (6) Bengal Immunity | ,, | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 1953 | 3.8 | 5.5 | 8.8 | 9.1 | 6.4 | 1.5 |
| | (7) May & Baker . | ,, | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 1.5 | 1955 | 1.7 | 2.9 | 3.9 | 2.2 | 1.7 | 3.2 |
| | (8) Alembic Chemical | ,, | 4·2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 1956 | 2·7 | 3.3 | 3.9 | 4.3 | 0.1 | 4.5 |
| | (9) Standard Pharmaceuticals . | | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 1957 | | 0.3 | 0.1 | 0.1 | 0.3 | Nil |
| | (10) Biological Evans | ,, | (Capacity included in that of Iodo-Chlor) | | | | | | | — | 0.4 | 0.2 | Nil | Nil | Nil |
| | | | — | — | — | 5.0 | 6.0 | 6.0 | 1966 | — | — | — | — | 0.6 | 0.1 |
| | | | 25.1 | 25.1 | 25.1 | 30.1 | 31.1 | 31.1 | | 10.1 | 15.0 | 19.0 | 19.4 | 14.1 | 14.65 |
| | (ii) *Small Scale Sector* | | | | | | | | | | | | | | |
| | (1) British Medicine | ,, | — | — | — | 1.8 | 1.8 | 1.8 | 1964 | — | — | — | 0.1 | 0.1 | 0.1 |
| | (2) Eagle Lab. . | ,, | (Included in the capacity for Iodo-Chlor) | | | | | | 1963 | — | 1.7 | 1.8 | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) Navarathna Pharmaceuticals | ,, | — | — | — | — | 4 to 6 | 4 to 6 | 1964 | — | — | — | — | 0.1 | 0 1 |
| (4) Neogy Labs . | ,, | (Included in the capacity for Iodo-chlor) | | | | | | | 1 0 | 1 0 | 2 5 | 0 3 | 0 9 | 3 6 |
| (5) Swiss Chemicals | ,, | Do. | | | | | | | — | — | — | 0 4 | 0 5 | 0 9 |
| (6) Sunny Industries | ,, | Do. | | | | | | 1963 | — | — | — | 0 4 | 0 6 | 0 4 |
| | | — | — | — | 1 8 | 5 8 | 5 8 | | 1 8 | 2 7 | 4 3 | 3 1 | 5 0 | 5 4 |
| **12** *Chlorpropamide* | | | | | | | | | | | | | | |
| (1) Albert David | Tonnes | 3 6 | 3 6 | 3 6 | 3 6 | 3 6 | 3 6 | 1961 | — | 0 06 | 0 02 | 0 07 | 0 05 | 0 1 |
| (2) Bengal Chemical | ,, | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 | 0 6 | 1963 | 0 04 | 0 07 | 0 05 | 0 06 | 0 10 | 0 1 |
| (3) Pfizer . . | ,, | — | — | — | 5 0 | 5 0 | 5 0* | 1965 | — | — | — | 1 82 | 12 81 | 2 2 |
| | | 4 2 | 4 2 | 4 2 | 9 2 | 9 2 | 9 2 | | 0 04 | 0 13 | 0 07 | 1 95 | 12 36 | 2 4 |
| **13** *Tolbutamide* | | | | | | | | | | | | | | |
| (1) Albert David . | Tonnes | 3 6 | 3 6 | 3 6 | 3 6 | 3 6 | 3 6 | 1966 | 0 1 | Nil | Nil | Nil | 0 4 | Nil |
| (2) Unichem Labs | ,, | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 | 1960 | 0 2 | 0 02 | 0 4 | 0 05 | Nil | Nil |
| (3) Hoechst . | ,, | 36 0 | 36 0 | 36 0 | 36 0 | 36 0 | 36 0 | 1962 | 2 9 | 8 1 | 10 6 | 16 4 | 24 5 | 12 0 |
| | | 42 6 | 42 6 | 42 6 | 42 6 | 42 6 | 42 6 | | 3 2 | 8 1 | 11 0 | 16 5 | 24 9 | 12 0 |
| **14** *Insulin* | | | | | | | | | | | | | | |
| (1) Boots . . | M.U. | — | — | — | 1080 | 1030 | 1030 | 1965 | — | — | — | 439 | 458 | 410 |
| | | — | — | — | 1080 | 1030 | 1030 | | — | — | — | 439 | 458 | 410 |

[*Single shift]

# TABLE 8·1—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 *I.N.H.* | | | | | | | | | | | | | | | |
| (a) *Large Scale Sector* | | | | | | | | | | | | | | | |
| (1) Albert David . | | Tonnes | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 1952 | 1.6 | 1.7 | 0.8 | 0.6 | 1.0 | 0.2 |
| (2) Bengal Chemical | | ,, | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 1954 | 0.5 | 0.5 | 0.4 | 0.2 | 0.1 | 0.1 |
| (3) Bengal Immunity | | ,, | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 1954 | 6.0 | 5.9 | 5.6 | 6.1 | 5.3 | 4.5 |
| (4) Biological Evans | | ,, | — | — | 18.0 | 18.0 | 18.0 | 18.0 | 1963 | — | — | 7.8 | 11.2 | 7.7 | 2.4 |
| (5) Calcutta Chemical | | ,, | 1.1 | 1.1 | 1.9 | 1.9 | 1.9 | 1.9 | 1957 | 0.1 | 0.1 | 0.1 | 0.1 | Nil | Nil |
| (6) Chemopharma . | | ,, | — | — | — | — | 60.0 | 60.0 | 1965 | — | — | — | 0.1 | 1.8 | 6.4 |
| (7) OPIL . . | | ,, | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1959 | 0.3 | 0.3 | 0.02 | Nil | Nil | Nil |
| (8) Pfizer . . | | ,, | 20.0 | 20.0 | 20.0 | 20.0 | 38.0 | 38.0 | 1956 | 17.3 | 19.0 | 17.9 | 21.7 | 25.9 | 28.9 |
| (9) Synbiotics . | | ,, | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 1958 | 22.4 | 29.0 | 27.8 | 17.5 | 16.2 | Nil |
| | | | 70.5 | 70.5 | 89.3 | 89.3 | 167.3 | 167.3 | | 48.2 | 50.5 | 60.4 | 57.5 | 58.0 | 42.5 |
| (b) *Small Scale Sector* | | | | | | | | | | | | | | | |
| (1) Dr. Karanth's Pharmaceuticals | | Tonnes | — | — | 7.2 | 7.2 | 8.0 | 8.0 | 1964 | — | — | 1.6 | 5.2 | 4.5 | 5.8 |
| (2) Suneeta Lbs. . | | ,, | — | — | — | — | — | 3.0 | 1967 | — | — | Nil | Nil | Nil | 4.2 |
| | | | — | — | 7.2 | 7.2 | 8.0 | 11.0 | | — | — | 1.6 | 5.2 | 4.5 | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 *P. A S* | | | | | | | | | | | | | | |
| (1) Biochemical & Synthetic | Tonnes | 150 | 150 | 150 | 150 | 150 | 150 | 1955 | 105 8 | 106 0 | 90 5 | 89 1 | 74 3 | 74 4 |
| (2) *Pfizer* | ,, | 60 | 60 | 60 | 72 | 95 | ***60 | 1961 | 39 0 | 61 0 | 62 6 | 75 4 | 60 8 | 82 6 |
| (3) Biological Evans | ,, | 72 | 72 | 72 | 72 | 72 | 72 | 1962 | 7 7 | 60 4 | 68 7 | 63 7 | 60 5 | 54 3 |
| (4) Wander Pharmed | ,, | — | — | 90 | 90 | 90 | 90 | 1961 | — | — | 19 9 | 102 7 | 104 0 | 44 6 |
| | | 282 | 282 | 372 | 384 | 407 | 372 | | 152 5 | 227 4 | 241 7 | 330 9 | 319 6 | 255 9 |
| 17 *Tetanus Anti-Toxin** | | | | | | | | | | | | | | |
| (1) Bengal Chemical | M U | 36 | 36 | 36 | 36 | 36 | 36 | 1930 | 8 | 10 | 8 | 12 | 15 | 83 |
| (2) Bengal Immunity | ,, | 6400 | 7600 | 9449 | 9449 | 9449 | 9449 | 1933 | 4824 | 6215 | 6629 | 3493 | 2993 | 3562 |
| (3) Biological Evans | ,, | — | — | — | 1200 | 1200 | 1200 | 1966 | — | — | — | — | 526 | 1128 |
| (4) Dey's Medical | ,, | — | — | — | — | 600 | 600 | 1966 | — | — | — | — | 56 | 240 |
| (5) Haffkine Inst | ,, | 2000 | 2000 | 2000 | 2000 | 3000 | 3000 | 1941 | 1525 | 1843 | 1786 | 1365 | 1876 | 1820 |
| | | 8436 | 9636 | 11485 | 12685 | 14285 | 14285 | | 6357 | 8063 | 8423 | 4872 | 5466 | 6808 |
| 18 *Prednisolone*** | | | | | | | | | | | | | | |
| (1) Glaxo Labs | Kg | 120 | 120 | 165 | 300 | 300 | 300 | 1958 | 129 | 89 | 100 | 78 | 16 | 2 2 |
| (2) Merck Sharp | ,, | 120 | 120 | 120 | 120 | 120 | 120 | 1959 | 157 | 142 | 88 | 12 | 8 | 1.9 |
| (3) Wyeth Labs | ,, | — | 600 | 600 | 600 | 600 | 600 | 1963 | — | 70 | 111 | 270 | 564 | 480 0 |
| | | 240 | 840 | 885 | 1020 | 1020 | 1020 | | 286 | 301 | 299 | 360 | 588 | 484 1 |

* On an average 1 litre of Tetanus Anti toxin equals 3 M U

** In the case of all units for Prednisolone the figures for all years are the over-all capacities licensed for all corticosteroids

*** Effective installed capacity reduced because of age of the plant

8.1.2. By sale value the position in respect of the specified basic drugs was as follows :—

TABLE 8.2

*Value of sales of basic drugs by large scale manufacturers**

(Rs. in lakhs)

| Basic drug | Value of scales during | | | |
|---|---|---|---|---|
| | 1964 | 1965 | 1966 | 1967 |
| 1. Vitamin A . . . | 36·12 | 42·33 | 54·81 | 56·40 |
| 2. Vitamin B-12 . . . | 33·79 | 40·73 | 48·27 | 1·61 |
| 3. Vitamin C . . . | 60·94 | 78·43 | 81·74 | 30·11 |
| 4. Sulphadiazine . . . | .. | .. | 9·12 | 3·14 |
| 5. Penicillin . . . | 185·01 | 412·06 | 453·87 | 283·96 |
| 6. Streptomycin . . . | 46·61 | 186·33 | 197·37 | 264·11 |
| 7. Chloramphenicol . . | 17·45 | 31·73 | 18·63 | 3·60 |
| 8. Tetracyclines . . . | 64·87 | 42·04 | 45·05 | 18·10 |
| 9. Amodiaquin . . . | .. | .. | .. | .. |
| 10. Chloroquin . . . | 3·03 | 6·44 | 4·09 | 0·18 |
| 11. (a) Iodo-chlor-hydroxy-quinoline. | 32·52 | 36·69 | 47·33 | 12·31 |
| (b) Di-iodo-hydroxy-quinoline. | 0·06 | 0·07 | 3·94 | .. |
| 12. Chlorpropamide . . | .. | .. | 7·00 | .. |
| 13. Tolbutamide . . . | 0·51 | 0·36 | 1·45 | 1·41 |
| 14. Insulin . . . . | .. | 4·26 | 9·38 | 7·84 |
| 15. I.N.H. . . . . | 38·67 | 27·56 | 38·18 | 4·76 |
| 16. P.A.S. . . . . | 15·74 | 35·87 | 31·86 | 24·17 |
| 17. Tetanus Anti-toxin . . | 65·41 | 40·59 | 35·02 | 24·73 |
| 18. Prednisolone . . . | 36·88 | 43·40 | 67·38 | 53·82 |
| TOTAL . | 637·61 | 1088·89 | 1156·02 | 790·65 |

* based on Table 22·3

8 1 3 In the case of certain drugs significant fall in production over the previous years was observed These are dealt with as follows :

*Vitamin A*—Production in 1965 was 24 5 MMU but in 1967 it was only 23 8 MMU, though it was higher than that of 1966

*Vitamin C*—In 1964 the production was 78 tonnes, in 1965 it was 90 tonnes, in 1966 the figures reached 131 tonnes, but fell down to 77 tonnes in 1967

*Sulphadiazine*—In 1967 it was the lowest ever since 1962 and less than half of the production even of 1965

*Penicillin*—Production in 1966 was 145 9 MMU and fell down to 118 6 MMU in 1967

*Chloramphenicol*—As against the production of 25 6 tonnes in 1965 and 24 3 tonnes in 1966, in 1967 it was only 21 6 tonnes

*Tetracyclines*—Production from 1963 to 1966 was between 21 5 and 19 8 tonnes, but it fell down to 15 7 in 1967

*Amodiaquin*—In 1966 production was 15 tonnes, but it was only 11 6 tonnes in 1967

*Iodo-chlor hydroxy quinoline*—In this case also production in 1967 was lower than even that of 1963 and very much lower than that of 1966, for in 1967 it was 71 8 only as against 87 0 tonnes in 1966

*Di Iodo hydroxy-quinoline*—Production in 1964 was 23 3 tonnes but fell down to 22 5 tonnes in 1965 and registered a further fall in 1966 But there was a slight rise in production in 1967, though it was lower than that for 1964

*Chlorpropamide*—There has been a very large fall between 1966 and 1967, the figures being 12 36 and 2 4 tonnes respectively

*Tolbutamide*—In this case also production in 1967 was almost half of the production of 1966

*Insulin*—In both 1965 and 1966 production was higher than that of 1967

*I N H*—Production in the large scale sector was lower in 967 than that of any year during the previous five years

*P.A.S.*—In this case also production in 1967 was lower than that of 1965 and 1966.

*Tetanus Anti-toxin.*—Production in 1967 was lower than that of 1963 or 1964.

*Prednisolone.*—Production in 1967 was lower than that of the previous year.

8.1.4. It is a matter of considerable significance that out of the 18 basic drugs, 13 drugs showed fall in sale value in 1967 compared to 1966. The sale value of all the drugs in 1965 was Rs. 10.89 crores, Rs. 11.56 crores in 1966 and Rs. 7.91 crores in 1967. There was thus a fall of 32 per cent in the overall value of the drugs sold in 1967 in the country compared to the year 1966. The only drug in the case of which a continuous rise in sale value was observed was Streptomycin. It would appear that there was a decline in the requirement of the basic drugs and particularly of the 13 basic drugs for which fall in sale value was recorded. The reasons given for this fall are as follows :

In some cases production fell owing to the problems relating to the non-availability of imported raw-materials and in certain others large imports of basic drugs were alleged to be the reason for reducing or stopping of production. Lack of demand is also mentioned as one of the reasons for substantial reduction in production. The reasons given for under-utilisation of the installed capacities of the various units have been discussed in the next paragraph. It is nevertheless very significant that while it is claimed that the total value of sales of formulations went up from Rs. 150 crores to Rs. 175 crores in 1967, in the case of the specified basic drugs there has been a substantial fall. The value of sales of the specified basic drugs came down by about 32 per cent. The reasons for such a fall in production in 1965, 1966 and 1967 as well as the remedies therefore have been further discussed below.

8.2. **Utilisation of capacity :**

8.2.1. The extent of utilisation of capacity for each of the basic drugs and reasons for under utilisation are discussed below :

*Vitamin A—Roche Products :* The Installed capacity is said to be 20 M.M.U. but its production in the last three years was between 14.3 and 15.7 MMU. In 1964 it was 16.0 then it

went down to 14.3 in 1966 but showed a slight rise in 1967 an reached 14.6 MMU. The reasons given by the unit for lo production are as follows :—

In 1966 sales of pharmaceutical grade of Vitamin A we hampered by the fact that the import licence was restricted ar non availability of imported vitamin resulted in weakening th demand for vitamin A for use in multi-vitamin products There was subsequent liberalisation of imports By the time liberlisatio had gone far enough to show a marked effect on Vitamin A sal to the pharmaceutical industry, a general recession in th economy served as a check on its sales and production In th short run of first 6 months of 1967, high production could b achieved but over a longer period, such high level of productio would be limited by recession in the economy and bottleneck arising in intermediate production

*Glaxo Labs* : In this case the production is less than half of th installed capacity It has reported that the reason for its continue under-utilisation of plant capacities in the years 1962 to 1964 w mainly due to inadequate sales of Vitamin A In 1965 and ear 1966 the non-availability of process materials limited its outpu and capacity utilisation It is presumed that the same facto operated to limit production in 1967.

*Vitamin B12 (b)*—Glaxo Labs has a capacity of 6 kilogram but produced only between 0 5 and 2 1 kgs during the previou years It has stated that vitamin B12(b) is made from B l which is locally purchased from Merck Sharp and it is no possible for it to produce economically with the indigenous materi as its price is much higher than that of imported B12(b) and ha therefore, lost its bulk sales market It has recently curtailed i production as import of B12(b) by actual users has been permitted

*Vitamin C*—Sarabhai Merck has stated that in 1962 whe imports of Vitamin C were freely allowed, it had to restrict i production to the extent of the market demand Further in 196 when imports of Vitamin C were restricted it could not only pro duce upto its licensed capacity but also increased its output to 7 tonnes in 1964 and to 90 tonnes in 1965, and to 131 tonnes in 196 It could have produced in the normal course upto 150 tonnes i the year 1966 and 180 tonnes in the year 1967, but owing to th large imports of Vitamin C coming into the country unde liberalised import licensing policy following devaluation in Jun 1966 and also under the NDR licences it had not been able t

find a market for its products. The result was that it had to curtail and finally stop production from September 1, 1967. As Vitamin C is a delicate substance and decomposes on storage, and also as the unit was losing large amounts by way of interest on inventory, it decided to close down the plant till such time as the imported stocks were exhausted and indigenous product was in demand.

*Sulphadizine.*—Atul Products has an installed capacity of 83 tonnes but it produced 12.4 tonnes in 1966 and had no production in 1967. It has informed us that it could not fully utilise its capacity on account of price restriction on acetyl sulphadiazine to be imported by the unit. It had therefore stopped production. This unit produced sulphadiazine from very light level intermediate which it was importing at the rate of Rs. 23.04 per kg. and adding to it the cost of other raw marterials and conversion cost, the cost of production and consequently that of sales went up to Rs. 64·25 per kg. As against this the cost of finished sulphadiazine imported from abroad was only from Rs. 38 to Rs. 41 per kg. It was, therefore, not at all in the interest either of the consumer or the economy of the country to import high level intermediate at high cost and incur loss in order to produce a drug which can be imported on an almost equivalent outlay of foreign exchange.

May & Baker produced 43.9 tonnes in 1967 as against 65.00 tonnes in 1966 while its installed capacity was 110 tonnes. It is stated that it worked up to full capacity in the years 1962 to 1964 when its capacity for all sulpha drugs was only 60 tonnes. But on the expansion of its capacity to 110 tonnes in 1965 it could not produce more due to lack of raw materials. In 1966 under-utilisation was due to commissioning difficulties and extensive engineering works on the new plant as well as inadequate import licences for raw materials. In 1967 it was due to the liberal import licencing policy for the basic drug sulphadiazine and also due to unsatisfactory supply position of Aminodiazine, an important raw material for Sulphadiazine, less than half the capacity was utilised.

*Penicillin.*—Hindustan Antibiotics is licensed for 84 MMU and its installed capacity is 77 MMU. Its production in the previous three years was between 58.4 and 68.2 MMU. A substantial fall was registered in 1967 as against the figure for 1966. The unit has reported that there was under-utilisation in 1963-64 due to non-availability of Procaine Hydrochloride, an essential raw material required for the manufacture of Procaine Penicillin; in 1964-65 it was due to (i) labour unrest, (ii) stoppage of recrystallisation operations to instal equipment for substantial expansion, (iii) shortage of imported raw materials, and (iv)

process difficulties In 1965 66 the fall resulted from heavy stocks of Procaine Penicillin and consequent curtailment of production as well as process difficulties Lack of demand is the reason given for fall in production in 1967

Alembic Chemical has a licensed capacity of 20 MMU and an installed capacity of 50 MMU, the production in 1966 was 51 MMU but it fell to 25 9 MMU in 1967 The reasons given for fall in production are said to be liberal imports from July 1966 The actual value of imports during the period from July 1966 to February 1968 was Rs 75 9 lakhs for the year 1967 it was 41 4 lakhs only

Standard Pharmaceuticals has a licensed as well as installed capacity of 20 MMU only but produced 26 7 MMU in 1966 and 33 1 MMU in 1967 We have no information how this unit was enabled to produce 65 per cent over and above its installed capacity

*Streptomycin* —Hindustan Antibiotics is licensed for 90 tonnes but has an installed capacity of only 80 tonnes it produced 68 6 tonnes in 1966 but 64 6 tonnes only in 1967 The reasons given for low production in 1966 and 1967 are process difficulties and inadequacy of services like chilled water and compressed air due to failure of equipment and also the inadequate supply of electricity by the Maharashtra State Government

As against the licensed capacity of 40 tonnes and an installed capacity for the same volume, production of Synbiotics in 1967 was 60 6 tonnes, more than 50 per cent of the licensed as well as the installed capacity

*Chloramphenicol* —Parke Davis has the licensed capacity of 20 tonnes and an installed capacity of ten tonnes Its production was 11 9 tonnes in 1967 and almost the same in the previous two years The installed capacity of 10 tonnes therefore appears to be incorrect and needs to be revised

*Boehringer Knoll* —As against the licensed capacity of 30 tonnes and installed capacity of 12 tonnes its production in 1967 was 9 7 tonnes only It was ten tonnes in 1964, went up to 13 4 tonnes in 1965, came down to 12 9 tonnes in 1966 and showed a substantial fall in 1967 The reasons given by the unit are, erection of machinery for the expansion of the installed capacity from 12 to 30 tonnes which was in progress and non availability of some essential raw material

*Mac Labs.* licensed for 0.8 tonne has an installed capacity of 1.2 tonnes and production in 1966 was 0.3 tonne. This is only 25 per cent of the installed capacity. There was no production in 1967 and the reason advanced by this unit is non-availability of raw materials.

*Tetracyclines* .—In the case of Pfizer the installed capacity was 10 tonnes and production of eight tonnes in 1967 was lower than that of 1966 or as a matter of that for any year from 1963. The reasons given are technical difficulties.

Cyanamid has registered fall in production all the way from 1963. From a production level of 12 tonnes in 1963 it fell down to 8.9 tonnes in 1964, to 8.6 tonnes in 1965, declined further to 6.3 tonnes in 1966 and touched the lowest level of five tonnes in 1967. This works out to 50 percent utilisation of capacity. It is stated that under-utilisation in 1964 was due to low demand in 1965, one of its air-compressers broke down affecting production for nearly 8 weeks. Further there was a countrywide shortage of corn due to delay in signing the agreement for import of corn under P.L. 480 which operated as a setback to its production for nearly three to four months. In 1966 though it had 100 per cent utilisation of installed capacity in terms of fermenters it had difficulty in maintaining production due to problems of indigenous raw materials, mainly corn steep liquor. The reasons for low production in 1967 were not available.

Hindustan Antibiotics' licensed as well as installed capacity stands at 1.5 tonnes. It maintained a production of 200 kgs. only, *i.e.* about 13 per cent of its installed capacity in 1962, 1963 and 1964. Production came down to 139 kgs. in 1965, 121 kg . in 1966 and 24 kgs. in 1967. It is reported that the production of oxytetracycline had to be discontinued owing to a legal dispute arising out of alleged patent infringement. Facilities were then diverted to establish manufacture of chlortetracycline Hydrochloride. From 1963 to 1966 its Tetracycline capacity was used for the development and manufacture of newer products. This plant is now being used as a general pilot plant for large scale development of newly discovered antibiotics.

Synbiotics has an installed capacity of four tonnes and while the production was 4.5 tonnes in 1966; it fell down to 2.6 tonnes in 1967. The reasons given are large imports of the product under the import liberalisation policy the import price being very much lower than the fair ex-factory prices in the country.

*Amodiaquin.*—Parke Davis has an installed capacity of 36 tonnes, it touched the production level of 14 9 tonnes in 1966 but came down to 11 5 tonnes in 1967 It is stated that its installed capacity for Amodiaquin has been under utilised because of the falling off in the demand for synthetic antimalarials resulting from success of the prophylatic measures undertaken by the National Malaria Eradication Programme

Albert David has the installed capacity of 600 kgs and produced only 70 kgs in 1963 and 1964 each, 20 kgs in 1965, 70 kgs in 1966 and only 100 kgs in 1967 It has *registered an increase in* production since 1966 but it is nowhere near the installed capacity which in itself is very very low The reason given by it is non receipt of adequate licences for import of raw materials required for production

*Iodo chlor-hydroxy-quinoline/Di iodo hydroxy quinoline* —There are eight units in the large scale sector which manufacture Iodochlor hydroxy-quinoline and ten units which manufacture di iodo hydroxy-quinoline Of these, six are common two manufacture only iodo-chlor hydroxy quinoline and four others only di iodo hydroxy quinoline The particulars of these units are as follows —

Units which manufacture both the drugs

(i) East India Pharmaceutical
(ii) Bengal Chemical
(iii) Brahmachari Research Institute
(iv) Albert David
(v) Alembic Chemical
(vi) Standard Pharmaceutical

(2) Units which manufacture only Iodo chlor hydroxy quinoline

(i) Atul Products
(ii) Hind Chemicals

(3) Units which produce only Di iodo hydroxy-quinoline

(i) Synbiotics
(ii) Bengal Immunity
(iii) May & Baker
(iv) Biological Evans

In the case of units producing both iodo-chlor-hydroxy-quinoline as well as di-iodo-hvdroxy-quinoline their capacities and production are being discussed jointly.

East India Pharmaceuticals has an installed capacity of 36.9 tonnes and its production for both the drugs was 28.6 tonnes in 1967 as against 25.1 tonnes in the previous year. The under-utilisation in this case is said to be due to lack of demand.

Bengal Chemical's installed capacity for both the items is 1.2 tonnes and the production in 1966 was 640 kgs. and in 1967 only 330 kgs. In addition to lack of demand this unit has also mentioned want of raw material as the reason for under-utilisation.

Brahmachari Research Institute has a combined capacity of five tonnes and its production in 1966 was 640 kgs. which fell down to 420 kgs. in 1967. It has stated that it could not utilise its full installed capacitv owing to shortage of raw material.

Albert David has a combined capacity of six tonnes but its production was only 2.5 tonnes in 1966 and 1.4 tonnes in 1967. It has stated that under-utilisation is due to non-receipt of adequate licences for imported raw material.

Alembic Chemical has an installed capacity of 4.6 tonnes against which its production in 1966 was 2.4 tonnes and 'nil' in 1967. The reason given by the unit for low utilisation was meagre demand.

Standard Pharmaceuticals has a capacity of six tonnes and its production in 1967 was 1.6 tonnes. The reasons given for under-utilisation are, that the production was limited to the company's requirements for formulations and for outside sale.

Atul Products has an installed capacitv of 40 tonnes for Iodo-chlor-hydroxy-quinoline and produced 41.2 tonnes in in 1966 but its production fell down to 19.2 tonnes in 1967. is stated that the utilisation of capacity was dependent on the off-take by Ciba. Ciba has stated that low off-take resulted from low demand for the product.

Hind Chemicals has an installed capacity of 750 kgs. and its production was 500 kgs. It has stated that under-utilisation was due to frequent shortages of raw material. Imported raw materials were found to be short on landing and entire drums of raw materials were stolen from the Port Trust storehouse and the dock.

Symbiotics has a capacity of 12 tonnes and its production was 9 1 tonnes in 1965, 6 4 tonnes in 1966 but only 1 5 tonnes in 1967 It has stated that its production was determined by sales demand which fluctuated because of the import of the finished product and secondly because of the frequent changes in import policy This reason does not appear to be wholly convincing in the light of the performance of other units

Bengal Immunity has an installed capacity of 4 5 tonnes and its production in 1964 was 3 9 tonnes, it felled down to 2 2 tonnes in 1965, to 1 7 tonnes in 1966 and went up to 3 2 tonnes again in 1967

May & Baker has an installed capacity of 4 2 tonnes and its *production in 1967 was 4 5 tonnes*

There are 12 small scale units which have been licensed for Iodo-chlor hydroxy quinoline and six for Di iodo hydroxy quinoline Production figures are available for seven of the former and five of the latter It is not possible to discuss individually their licensed or installed capacities since these are based mostly on estimates and not on assigned capacity According to the claims made by the units, the total licensed capacity comes to 67 tonnes and installed capacity to 63 tonnes and production in 1967 to 30 tonnes

No less than 22 manufacturers have been licensed for Iodo chlor-hydroxy-quinoline and 16 for Di iodo-hydroxy quinoline making a total of 38 of which six are common, which give a figure of 32 manufacturers in all The total licensed capacity for all the units for both the drugs is 162 tonnes The installed capacity is claimed to be 187 8 tonnes and the production in 1967 was 91 3 tonnes, *i e* almost 50 per cent of the capacity claimed to be installed Most of the units have pleaded lack of demand In the case of this drug the capacity utilised is less than 50 per cent but there are 36 units in the field, of these there are two units which between themselves can provide almost the entire requirement for the whole country It is a matter for serious consideration if such extensive fragmentation of capacity is justified

*Chlorpropamide*—Albert David has an installed capacity of 3 6 tonnes but manufactured only 100 kgs, *i e* about three per cent of its installed capacity It has stated that there was under utilisation owing to non receipt of adequate licences for imported raw materials required for the drug

Bengal Chemical has an installed capacity of 600 kgs. and produced only 100 kgs. in 1966 and the same quantity in 1967. Reason for under-utilisation furnished by this unit is lack of demand.

Pfizer has an installed capacity of five tonnes but produced 12.21 tonnes in 1966 and only 2.2 tonnes in 1967. It states that it had enough stocks of chlorpropamide at the beginning of the year and had not therefore manufactured a larger quantity in 1967.

*Tolbutamide.*—Albert David and Unichem Laboratories did not produce this drug in 1967 even though they had installed capacities of 3.6 and 3 tonnes respectively.

Hoechst which has an installed capacity of 36 tonnes produced 12 tonnes in 1967 as against 24.5 tonnes in 1966. It has stated that when the planning was done, Carbutamide and Tolbutamide were the only oral anti-diabetics in the market. But with the introduction of Chlorpropamide a large share of the market to the extent of almost two-thirds has gone to this new drug.

Albert David has stated that its under-utilisation in 1966 was due to non-receipt of adequate licences for imported raw material. Unichem Labs. has informed us that Hoechst filed a suit for patent infringement as a result of which its production of Tolbutamide is held up.

*Insuline.*—The only unit producing this drug is Boots with an installed capacity of 1080 MU as against the licensed capacity of 1500 MU. Production started in 1965 and registered a figure of 439 MU in that year it went up to 458 MU in 1966 but came down to 410 MU in 1967. The unit has stated that during the period from January to July 1965 its utilisation of capacity was on one shift basis and in the period from August to October 1965 it geared up production on two shifts basis but due to lack of demand from other formulators and imports being permitted against actual users' licences for 1965-66 and under National Defence Remittance Scheme, it had to revert to single shift working. Other factors which contributed to the under-utilisation by this factory were shortage of essential raw materials, lack of pancreas gland, inadequate water supply, refrigeration defects, power failure and processing difficulties owing to the supply of pancreas gland being found fibrous. It is confronted

with problems relating to its boiler, vacuum pumps, concentration units, filteration equipment, mincer etc which have affected its capacity and production

*I.N.H.*—This is again one of the drugs for which no less than 18 units are licensed 14 in the large scale sector and four in the small scale Only nine units in the large scale and two in the small scale sector have installed capacities Of the nine units in the organised sector, only six produced the drug in 1967 *but seven in 1966 and eight in 1965 In the small scale sector* both the units are in production One of the largest units for this drug is Pfizer with an installed capacity of 38 tonnes Its production in 1965 was 21 7 tonnes which went up to 25 0 tonnes in 1966 and to 28 9 tonnes in 1967 It was still very much below the installed capacity and the reason given was shortage of raw material and major machinery breakdowns Chemo Pharma is licenced for 60 tonnes and the same is also claimed to be the installed capacity This capacity includes other ... also It started production in 1965 and produced only *1 8 tonnes in 1966 which was three per cent of* its total capacity and only 6 1 tonnes in 1967 which amounted to about nine per cent of its capacity It has attributed such enormous under utilisation of its capacity to lack of additional block ceiling for the import of raw materials required for the manufacture of INH It was asked to meet its requirements of imported raw materials from within the allotted block ceiling *which was fully utilised for the import of raw materials required* for the manufacture of other items In 1965 the unit was forced to restrict its manufacture of Bismuth Salts and divert a part of the block ceiling used for the import of virgin bismuth metal for obtaining the raw materials for the manufacture of INH It had therefore gone into trial production of INH only in 1966 It stepped up the production in 1967 to the extent the indigenous raw materials were made available at reasonable prices

Synbiotics has a capacity of 30 tonnes but did not produce any INH in 1967 The unit has stated that its stoppage of production resulted first from the import of the finished product and secondly on account of frequent changes in the import policy

Biological Evans has a capacity of 18 tonnes and produced only 2 4 tonnes in 1967 even though it had produced 11 2 tonnes in 1965 and 7 7 tonnes in 1966 It says that it reached a fairly high utilisation of capacity in 1965 but owing to acute scarcity of acids it was forced to stop production in the first half of 1967 and also owing to availability of imported INH at cheaper prices

Bengal Chemicals has a capacity of 2.1 tonnes but produced only 100 kgs. in 1967 which works out to less than 5 per cent of the total. The reason given is lack of demand.

Bengal Immunity Co. has a capacity of ten tonnes and the production was 4.5 tonnes in 1967. The reasons given for low production are difficulty in obtaining Picoline and Hydrazine Sulphate the key raw materials which are imported.

Albert David has an installed capacity of six tonnes, achieved 1 tonne i.e. about 16 per cent in 1966 but went down to 200 kgs. in 1967, i.e. about 3 per cent of the total capacity. It says that non-receipt of adequate licences for imported raw materials is the cause for such gross under-utilisation.

Calcutta Chemicals has the capacity for 1.9 tonnes. It has not been in production for the last two years. The reasons given for stoppage of production are increasing cost of raw materials and the price freeze for the finished product.

OPIL has a capacity for 1.3 tonnes. It has not been in production for the last three years. The reasons given are temporary suspension because of high prices of raw materials.

The small scale sector appears to have done very well with a total installed capacity of 11 tonnes and the production of ten tonnes during 1967.

*P.A.S.*—Biochemical & Synthetic has an installed capacity of 150 tonnes but produced 106 tonnes each in 1962 and 1963; 91 tonnes in 1964. Its production started tapering off from 91 tonnes in 1964, to 89 tonnes in 1965 and 74 tonnes in 1966 and the same volume was maintained in 1967. The reasons given for fall in production are lower indent by its sole selling agents who have mentioned lack of demand as the reason.

Pfizer has a capacity of 60 tonnes and it has produced 82.6 tonnes in 1967.

Biological Evans has a capacity of 72 tonnes and produced 54.3 tonnes in 1967 as against its Higher utilisation of 68.7 tonnes in 1964. It says that fall in demand and non-availability of alcohol were the reasons for the low utilisation of capacity.

Wander Pharmed has the capacity of 90 tonnes but the production was 44.6 tonnes in 1967. The reasons given for under-utilisation are liberalised imports after devaluation.

Though imports were banned in 1967-68 there were heavy imported stocks in the market till August 1967. It applied to Government for increase in price of sodium PAS but Government did not grant it. It had, therefore, to stop production in July, 1967.

*Tetanus Anti toxin*—Bengal Immunity has an installed capacity of 9149 MU and produced 3562 MU in 1967. The reason for under-utilisation was said to be heavy imports.

Haffkine Institute has an installed capacity of 3000 MU and produced 1880 MU in 1967. The reason given is the shortage of stabling space for horse.

Biological Evans has an installed capacity of 1200 MU and its production was almost equivalent to the capacity at 1128 MU.

Dey's Medical has been licensed for 600 MU but have not yet installed its capacity for basic manufacture and is engaged at present in ampouling operations only from imported antitoxin. Its total production was 210 MU in 1967.

*Prednisolone*—Glaxo Labs. has an installed capacity of 300 kgs. and its production in 1962 was 129 kgs. but was only two kgs. in 1967. The production was limited by the lack of availability of process material.

Merck Sharp with an installed capacity of 120 kgs. actually produced 157 kgs. in 1962 but in 1967 it produced only two kgs. against the installed capacity of 120 kgs. It has said that Government banned the import of intermediates and it has therefore, stopped manufacture of prednisolone.

Wyeth Lab. has an installed capacity of 600 kgs. and produced 480 kgs. in 1967 as against 561 in the previous year. The reason given for decline in production is that the demand did not justify higher utilisation of capacity.

8.2.2. Of 54 drug units (By drug unit is meant a drug according to the unit which produces it. For example if the same drug is produced by three units, three drug units has been adopted. Consequently if one unit produces more than one drug it has been treated as one unit for each) in 1965, 57 in 1966 and 58 in 1967 analysed, the position with regard to utilisation is as given in Table 8.3.

TABLE 8.3

*Number of drug units categorised according to ranges of utilisation of capacity*

| Utilisation range (%) | Number of drug-units | | |
|---|---|---|---|
| | 1965 | 1966 | 1967 |
| 201—250 . . . . . . . . | Nil | 1 | 1 |
| 151—200 . . . . . . . . | Nil | Nil | 2 |
| 126—150 . . . . . . . . | Nil | 1 | 1 |
| 101—125 . . . . . . . . | 6 | 7 | 3 |
| 91—100 . . . . . . . . | 3 | 3 | 1 |
| 76—90 . . . . . . . . | 10 | 8 | 7 |
| 51—75 . . . . . . . . | 9 | 10 | 7 |
| 26—50 . . . . . . . . | 13 | 9 | 16 |
| 11—25 . . . . . . . . | 1 | 9 | 6 |
| 6—10 . . . . . . . . | 6 | 2 | 1 |
| 0—5 . . . . . . . . | 6 | 7 | 13 |
| TOTAL . | 54 | 57 | 58 |

The above figures of low production do not reveal a healthy picture of the Drugs Industry. When capacities are allowed for the manufacture of a commodity the licences are issued in relation to the requirements of the commodity in the country. It is expected that with greater increase in production not only will imports be lessened or eliminated but also the industry would be able to meet the increase in demand. It was therefore to be expected that as the years pass there would be greater utilisation of capacities rather than progressive under utilisation. This needs extensive replanning in so far as the Drugs Industry and especially the units manufacturing the specified drugs are concerned.

8 2 3 Simultaneously with progressive under-utilisation of capacity on the one hand there have been complaints of excessive import of drugs which are already being produced in the country and lack of raw materials or foreign exchange for the import of the same An examination of the imports during the previous three years of the specified drugs and the extent of utilisation of capacity during the same period reveals the following facts

*Vitamin B 12*—As against the total capacity of 64 kgs the production was 53.7 kgs in 1967 and there was import of 26 kgs

*Vitamin C*—In the case of Vitamin C there is only one unit namely, Sarabhai Merck which makes it Its capacity was 90, 150 and 180 tonnes respectively in 1965 1966 and 1967, the production was 90, 131 and 77 tonnes respectively The imports during these three years were 13, 118 and 268 tonnes respectively The unit has made the point that the steep rise in imports (which were due to the N D R Scheme and import liberalisation after Devaluation) had affected its production On the other hand, imports had to be permitted because of the inability of the firm to meet the increasing demand in the country In any case when the unit was able to utilise its capacity in larger measure, imports were banned by Public Notice on 30th September, 1966 It is learnt that the unit has since recommenced production

*Penicillin*—In the case of Penicillin lack of offtake owing to heavy stock has been mentioned, against the installed capacity of 147 MMU, the production was 146 MMU in 1966 but it fell down to 119 MMU in 1967 It is significant to note that when production in 1964 was 85 MMU the import was 43 MMU making a total availability of 128 MMU, when production went up in 1965 by 17 MMU the import was reduced by 32 MMU However when production went up to 146 MMU the import instead of being reduced went upto 41 MMU, i e, at about the same level as that of 1964 even though production in comparison to 1964 had gone up by 61 MMU The result was adverse for the Indian industry and in 1967 the production fell by 27 MMU compared to that in the previous year In 1967 the import of Penicillin was 78 MMU as against 41 MMU in 1966 and 11 MMU in 1965

*Tetracyclines*—In the case of Tetracyclines the installed c city is 25 5 tonnes and production in 1963 was 21 5 tonne

it fell to 19.8 tonnes in 1966 and to 15.7 tonnes in 1967. For the same years, in 1966 the imports were of the order of 32 tonnes and in 1967, 23.1 tonnes.

8.3. Utilisation of capacity in the case of formulating units :

8.3.1. Since the concept of capacity in respect of specific drugs has not been applied in so far as formulations are concerned, utilisation of capacity can be judged only by the volume of preparations for which the unit was licensed and the extent to which such preparations were or were not manufactured. Utilisation is therefore in terms of tablets, ampoules, bottles etc. produced and not in terms of the quantities for each specified formulation. Nevertheless where the capacities in terms of these preparations to be manufactured by the units have not been utilised for all drugs for which they are licensed and not only for the specific drugs, certain reasons have been given by them for lack of utilisation of capacity. These are as follows :

8.3.2. Hindustan Antibiotics has said that in the case of vialling there was under utilisation of capacity owing to mechanical troubles with one of the automatic lines in 1962-63, in 1963-64 two shifts could not be operated throughout the year due to shortage of operators, in 1964-65 due to labour unrest and inability to work the machines for two shifts and in 1965-66 due to shortage of personnel as well as slowing down resulted owing to process difficulties. In the matter of capsuling it has said that owing to shortage of materials the installed capacity was not fully utilised. Kemp and Co., has complained of lack of demand and shortage of raw materials. Smith Stanistreet says that capsuling was short of licensed capacity owing to the pattern of sales take-off and lack of timely availability of raw material. Geoffrey Manners has complained of difficulties in the procurement of materials and lack of acceptable specifications in the case of indigenous raw materials. Ranbaxy Laboratories was faced with shortage of foreign exchange for the import of essential raw materials. Mac Labs. has mentioned shortage of raw materials as the reason. G.D.A. Chemicals, Calcutta has stated lack of imported raw materials and high prices of indigenous specified drugs. Shetty's Pharmaceuticals and Biological Evans, Hyderabad has mentioned as reasons for under-utilisation of capacity, severe competition and non-availability of raw materials at competitive rates. Pharmakon Labs., Bombay has said that under-utilisation was due to shortage of raw materials and delay in observing formalities under Government controls relating to excise. In general, lack of raw

material imported or indigenous appears to be responsible for under-utilisation of capacity

8 3 3 Since the demand for drugs is limited by the requirements and the prescriptions written by physicians, it cannot be expected that if greater utilisation was possible the demand would have grown Drugs are not like any other consumer commodity the demand or consumption of which need to be promoted or fostered There have been no complaints of any special shortages of drugs in the country except in the case of streptomycin and it has to be assumed that the capacities set up for the manufacture of preparation of various drugs are generally in excess of the existing demand

# CHAPTER 9

## FUTURE EXPANSION—BASIC DRUGS

9.1. We have been informed that it is the Government's policy for the drug industry during the Fourth Plan to achieve expansion by and large through expansion of the existing units rather than by the establishment of new ones. The advantage of securing expansion through existing units lies in the achievement of the desired capacity with the minimum investment and less expenditure on foreign exchange. It would also enable the industry to achieve optimum production and thus bring down the cost of production. In the case of seven of the specified drugs the indigenous production is not adequate and imports have therefore been allowed. These drugs are Sulphadiazine, Streptomycin, Tetracycline, Amodiaquin, Chloroquin, Tolbutamide and Tetanus Anti-toxin. Tetanus Anti-toxin, Chloroquin and Sulphadiazine are now being allowed on a restricted basis. It is expected that when the capacities already licensed are established and fully utilised there may be no need for imports. According to the industrial policy, issue of fresh licences for antibiotics such as Penicillin, Streptomycin and Tetracyclines is banned except for purposes of expansion by the existing units. In the case of sulpha drugs even expansion is not proposed to be allowed. Licensing of other essential drugs is done on merits. Of the new units licensed IDPL has established capacities for Penicillin (140 MMU), Streptomycin (85 tonnes) and Tetracyclines (120 Tonnes) in May-June 1967. The units which have not yet installed the expansion licensed to them are as given in Table 9.1 :

TABLE 9.1

*Units which have not yet established capacity for drugs licensed*

| Drug | Unit | Unit of measurement | Capacity licensed | Year of licence |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| Vitamin B12 . | Synbiotics . | Kg. | 13·2 | 1956 |
| Vitamin B12(b) . | Alembic Chemicals | ,, | 20·0 | 1966 |

TABLE 9.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 3 Vitamin C . . | Hindustan Anti-biotics | Tonnes | 125 0 | 1961 |
| 4. Chloramphenicol . | Neo Pharma . | ,, | 3 6 | 1960 |
| 5 Chloramphenicol . | Dey's Medical . | ,, | 18 00 | 1962 |
| 6 Chloroquin . . | May & Baker . | ,, | 12 00 | 1963 |
| 7 Iodo-chlor hydroxy-quinoline | Them's Pharmaceuticals. | ,, | 0 2 | 1952 |
| 8 Iodo-chlor hydroxy-quinoline | Indian Research Institute. | ,, | 0 2 | 1952 |
| 9. Chlor propam de . | Kemp & Co . | ,, | 0 1 | 1962 |
| 10 I N H . . | IDPL (Hyderabad) | ,, | 20 0 | 1962 |
| 11 I N H . . | Warner . . | ,, | 25 0 | 1962 |
| 12 I N H . . | CIPLA . . | ,, | 10 0 | 1967 |
| 13 I N H . . . | South India Res Inst. | ,, | 50 0 | 1967 |
| 14. I N H . | Atul Drug House . | ,, | 160 0 | 1967 |
| 15 P A S . . | South India Res Inst | ,, | 50 0 | 1967 |
| 16 P A S . | Chemo-Pharma | ,, | 30 0 | 1967 |
| 17. Tetanus Anti toxin . | Chowgule | M U | 7500 | 1966 |

9 2 In the case of Iodo-chlor-hydroxy-quinoline, two units with capacities of 200 kgs each were licensed in 1952 but they have not yet installed their plant and machinery in spite of the passage of 16 years The total installed capacity for this drug is 151 tonnes and the consumption in the previous three years ranged between 62 8 and 82 8 tonnes. There are already too many licencees for this drug and it is worth considering if

TABLE 9.4

*Expansion of capacity for the specified basic drugs*

| Sl. No. | Name of the basic drug | Unit of measurement of capacity | Already established | Licensed but not yet established | Total |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1. | Vitamin A . . . | MMU | 40 | .. | 40 |
| 2. | Vitamin B12 . . . | Kg. | 52 | 13·2 | 65·2 |
| 3. | Vitamin C . . . | Tonnes | 180 | 125 | 305 |
| 4. | Sulphadiazine (x) . . | ,, | 193 | .. | 193 |
| 5. | Penicillin . . . | MMU | 287 | .. | 287 |
| 6. | Streptomycin . . . | Tonnes | 205 | .. | 205 |
| 7. | Chloramphenicol . . | Do. | 23·2 | 21·6 | 44·8 |
| 8. | Tetracyclines . . . | Do. | 145·5 | .. | 145·5 |
| 9. | Amodiaquin . . . | Do. | 36·6 | .. | 36·6 |
| 10. | Chloroquin . . . | Do. | 7 | 12 | 19 |
| 11. | Iodo-chlor and Di-iodo hydroxy-quinoline. | Do. | 187·8 | 0·6 | 188·4 |
| 12. | Chlorpropamide . . | Do. | 9·2 | 0·1 | 9·3 |
| 13. | Tolbutamide . . . | Do. | 42·6 | .. | 42·6 |
| 14. | Insulin . . . . | MU | 1080 | 420 | 1500 |
| 15. | I. N. H. . . . . | Tonnes | 178·3 | 265 | 443·3 |
| 16. | P. A. S. . . . . | ,, | 372 | 80 | 452 |
| 17. | Tetanus Anti-toxin . . | MU (in '000) | 14285 | 7500 | 21785 |
| 18. | Prednisolone (xx) . . | Kg. | 1020 | .. | 1020 |

(x) In this case capacity is inclusive of other sulpha drugs also.

(xx) In this case capacity is inclusive of other corticosteroids also.

# CHAPTER 10

## AVAILABILITY AND DOMESTIC CONSUMPTION

10.1. Particulars of the production of drugs during the last four years, the quantities consumed by the unit itself for the manufacture of formulations, sales to other manufacturers, exports and imports of the 18 specified basic drugs are given in Table 10.1.

TABLE 10.1

*Domestic consumption of the specified basic drugs*

| Sl No | Name of the basic drug | Unit of measurement | Year | Production | Self consumption | Sales | Exports | Imports | Total availability | Index (with 1964=100) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| | | | | | | | | | (Col 6+7+9—8) | |
| 1 | Vitamin A | MMU | 1964 | 22.7 | 12.5 | 5.6 | | | 18.1 | 100 |
| | | | 1965 | 24.5 | 11.5 | 6.3 | | | 17.8 | 93 |
| | | | 1966 | 21.4 | 11.0 | 8.2 | | | 19.2 | 106 |
| | | | 1967 | 23.8 | 11.0 | 8.4 | | .. | 19.4 | 107 |

TABLE 10.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Vitamin B12 . . . . | Kgs. | 1964 | 21·3 | 4·9 | 17·8 | 1·2 | 1·1 | 22·6 | 100 |
| | | | 1965 | 27·2 | 6·8 | 22·0 | 0·6 | 0·7 | 28·9 | 128 |
| | | | 1966 | 41·8 | 13·4 | 28·0 | .. | 0·3 | 41·7 | 185 |
| | | | 1967 | 43·4 | 21·0 | 33·0 | .. | 26·0 | 70·0 | 310 |
| 3 | Vitamin C . . . . | Tonnes | 1964 | 78 | .. | 71 | .. | 6 | 77 | 100 |
| | | | 1965 | 90 | .. | 102 | 1·4 | 43 | 145 | 188 |
| | | | 1966 | 131 | .. | 112 | .. | 148 | 260 | 338 |
| | | | 1967 | 77 | .. | 38 | .. | 268 | 306 | 397 |
| 4 | Sulphadiazine . . . | ,, | 1964 | 77 | 24 | 58 | .. | 64 | 146 | 100 |
| | | | 1965 | 108 | 40 | 62 | .. | 59 | 161 | 110 |
| | | | 1966 | 77 | 58 | 15 | .. | 109 | 182 | 125 |
| | | | 1967 | 44 | 49 | 5 | Nil | 122 | 176 | 121 |
| 5 | Penicillin . . . . | MMU | 1964 | 85 | 28 | 61 | .. | 43 | 132 | 100 |
| | | | 1965 | 103 | 32 | 84 | .. | 11 | 127 | 96 |
| | | | 1966 | 146 | 38 | 93 | 0·3 | 41 | 172 | 130 |
| | | | 1967 | 119 | 43 | 54 | Nil | 78 | 175 | [illegible] |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 Streptomycin | Tonnes | 1964 | 58 | 9 | 50 | | 51 | 118 | 100 |
| | | 1965 | 92 | 20 | 00 | 1 0 | 44 | 143 | 121 |
| | | 1966 | 104 | 20 | 84 | 0 2 | 2 | 106 | 90 |
| | | 1967 | 125 | 36 | 90 | | 62 | [illegible] | 159 |
| 7 Chloramphenicol | ,, | 1964 | 19 7 | 12 1 | 3 5 | | 46 1 | 61 7 | 100 |
| | | 1965 | 25 6 | 11 1 | 7 7 | 1 0 | 5[illegible] 6 | 77 4 | 125 |
| | | 1966 | 24 3 | 16 7 | 4 5 | 3 0 | 93 9 | 112 1 | 182 |
| | | 1967 | 21 6 | 18 3 | 0 8 | 2 5 | 45 5 | 62 1 | 101 |
| 8 Tetracyclines | ,, | 1964 | 19 8 | 9 0 | 4 7 | | 2 0 | 15 7 | 100 |
| | | 1965 | 27 6 | 12 1 | 6 6 | | 3 3 | 22 0 | 140 |
| | | 1966 | 19 8 | 13 4 | 4 7 | | 32 0 | [illegible]0 1 | 319 |
| | | 1967 | 15 7 | 14 1 | 3 5 | | 23 1 | 40 7 | 259 |
| 9 Amodiaquin | ,, | 1964 | 10 0 | 9 8 | | | 8 0 | 17 8 | 100 |
| | | 1965 | 10 7 | 11 6 | | | | 11 6 | 65 |
| | | 1966 | 15 0 | 15 0 | | | | 15 0 | 84 |
| | | 1967 | 11 6 | 9 8 | | | | 9 8 | 55 |
| 10 Chloroquin | | 1964 | 1 2 | 1 1 | 0 2 | | 12 5 | 13 8 | 100 |
| | | 1965 | 2 4 | 1 0 | 0 3 | 1 7 | 15 5 | 15 1 | 109 |
| | | 1966 | 2 8 | 2 8 | 0 9 | | 2 4 | 6 1 | 44 |
| | | 1967 | 3 4 | 3 3 | 0 1 | | 18 5 | 21 9 | 159 |

TABLE 10.1—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| 11 | Iodo-Chlor-hydroxy-quinoline . | Tonnes | 1964 | 63·5 | 24·7 | 32·0 | .. | .. | 56·7 | 100 |
| | | | 1965 | 63·6 | 27·7 | 45·6 | .. | .. | 73·3 | 129 |
| | | | 1966 | 87·0 | 29·1 | 53·7 | .. | .. | 82·8 | 146 |
| | | | 1967 | 71·8 | 29·4 | 39·1 | .. | .. | 68·5 | 121 |
| 12 | Chlorpropamide . . . | ,, | 1964 | 0·1 | 0·1 | .. | .. | 2·4 | 2·5 | 100 |
| | | | 1965 | 2·0 | 0·7 | .. | .. | 2·7 | 3·4 | 136 |
| | | | 1966 | 12·4 | 5·2 | .. | 4·9 | 0·2 | 5·4 | 216 |
| | | | 1967 | 2·4 | 4·2 | .. | .. | 0·7 | 4·9 | 196 |
| 13 | Tolbutamide . . . . | ,, | 1964 | 11·0 | 11·3 | 0·20 | .. | 1·6 | 13·1 | 100 |
| | | | 1965 | 16·5 | 12·5 | 0·03 | .. | 1·2 | 13·7 | 105 |
| | | | 1966 | 24·9 | 17·4 | 2·10 | .. | 0·5 | 20·0 | 153 |
| | | | 1967 | 12·0 | 18·5 | 0·4 | .. | 1·5 | 20·4 | 156 |
| 14 | Insulin . . . . . | MU | 1964 | .. | .. | .. | .. | 757 | 757 | 100 |
| | | | 1965 | 439 | 105 | 89 | .. | 520 | 714 | 94 |
| | | | 1966 | 458 | 311 | 199 | .. | 69 | 579 | 76 |
| | | | 1967 | 410 | 393 | 166 | .. | 24 | 583 | 77 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 15 | I N H. . . . . . | Tonnes | 1964 | 62 0 | 20 0 | 25 0 | .. | 11·1 | 56 1 | 100 |
| | | | 1965 | 62 7 | 29 3 | 19 4 | 0 5 | 21 9 | 100 1 | 178 |
| | | | 1966 | 62 3 | 35 1 | 22 4 | .. | 27 5 | 85 0 | 151 |
| | | | 1967 | 52 5 | 37 4 | 18 8 | . | 11 6 | 67 8 | 121 |
| 16 | P A S. . . . . . | ,, | 1964 | 242 | 78 | 152 | 3 5 | 174 | 404 | 100 |
| | | | 1965 | 331 | 124 | 218 | 1 0 | 14 | 355 | 88 |
| | | | 1966 | 320 | 92 | 172 | .. | 136 | 400 | 99 |
| | | | 1967 | 256 | 91 | 176 | .. | 95 | 362 | 90 |
| 17 | Tetanus Anti-toxin . . | Thousand MU | 1964 | 8 4 | 8 4 | .. | 0 04 | 6 2 | 14 6 | 100 |
| | | | 1965 | 4 0 | 4 9 | .. | | 15 0 | 19 9 | 136 |
| | | | 1966 | 5 5 | 5 5 | .. | . | 4 5 | 10 0 | 68 |
| | | | 1967 | 6 9 | 6 4 | .. | .. | 5 1 | 11 5 | 79 |
| 18 | Prednisolone . . . | Kgs | 1964 | 299 | 80 | 240 | | 2 | 322 | 100 |
| | | | 1965 | 360 | 91 | 267 | .. | 2 | 360 | 112 |
| | | | 1966 | 588 | 112 | 412 | .. | 1 | 525 | 163 |
| | | | 1967 | 484 | 99 | 348 | 75 | 8 | 380 | 118 |

10.2. It is quite likely that there might have been stocks at the beginning of the year as well as at the end of the year for imports as well as domestic production. But the figures from imports are not available and the stocks have, therefore, not been shown or taken into account for arriving at figures of domestic consumption. In other words, figures of domestic consumption have been taken as total of self-consumption, sales and imports minus exports.

10.3. In the case of Vitamin A, the domestic consumption was 18.1 kgs. in 1964, came down to 17.8 kg.. in 1965 but went up to 19.2 kgs. in 1966 and 19.4 kgs. in 1967.

For Vitamin B12 domestic consumption went up by about six kgs. in 1965 and further by 12 kgs. in 1966 and owing to heavy imports in 1967 the consumption appears to be of the order of 70 kgs. as against 23 kgs. in 1964. But this figure does not appear to represent the correct position, since the figures for consumption and stocks for imports are not available. It is quite likely that all the imports may not have been consumed but part held over for the next year. The likelihood, therefore, is that the consumption was at the same level as in 1966 when imports were low.

Domestic consumption of Vitamin C went up from 77 tonnes in 1964 to 145 tonnes in 1965, 260 tonnes in 1966 and steeply to 306 tonnes in 1967. Here again all the imported goods could not have been consumed.

Domestic consumption of Sulphadiazine went up to 161 in 1965 from 146 tonnes in 1964 and to 182 in 1966 but came down to 176 in 1967.

In the case of Penicillin, domestic consumption came down from 132 MMU in 1964 to 127 MMU in 1965 but went up to 169 MMU in 1966 and 175 MMU in 1967.

For Streptomycin, domestic consumption went up from 118 tonnes in 1964 to 143 tonnes in 1965, came down to 106 tonnes in 1966 but went up again to 188 tonnes in 1967. It is said that there was a shortage in 1966 owing to restrictions on imports.

Domestic consumption of Chloramphenicol went up from 61.7 tonnes in 1964 to 77.4 tonnes in 1965, steeply to 112.1 tonnes in 1966, due to heavy imports in that year, and came down 62.1 tonnes in 1967.

Domestic consumption of Tetracycline which was [illegible] tonnes in 1964 went up to 22.[illegible] tonnes in 1965 [illegible] to 31.[illegible] tonnes in 1966, [illegible] came down to [illegible] tonnes in 1967.

In the case of Streptomycin, domestic consumption came down from 22.[illegible] tonnes in 1964 to [illegible] tonnes in 1965 and to [illegible] tonnes in 1966 but again came down to 4.3 tonnes in 1967. In the case of the other antibiotic, viz., Chloramphenicol, domestic consumption increased [illegible] tonnes in [illegible] in 1965, came down to a low figure of [illegible] tonnes in 1966 but went up to 21.9 tonnes in 1967.

For Indian [illegible] consumption was 56.7 tonnes in [illegible] tonnes in 1965, [illegible] tonnes in 1966 and 62.8 tonnes in 1967.

The consumption of Chlorpropamide was [illegible] tonnes in 1964, 3.4 tonnes in 1965 and 3.4 tonnes in 1966 which came down to 4.9 tonnes in 1967. In the case of the other oral anti-diabetic drug Tolbutamide, the consumption was [illegible] tonnes in 1964, 13.7 tonnes in 1965, 20.0 tonnes in 1966 and 21.4 tonnes in 1967.

The consumption of Insulin was 7.7 MU in 1964, 7.4 MU in 1965, 573 MU in 1966 and 573 MU in 1967. The consumption in 1966 and 1967 came down owing to availability of a number of oral anti-diabetic drugs.

In the case of I.N.H., anti-tuberculosis drug, the consumption was 56.1 tonnes in 1964, 100.1 tonnes in 1965, [illegible] tonnes in 1966 and 67.8 tonnes in 1967. In the case of the other anti-tubercular drug P.A.S., the consumption was 434 tonnes in 1964, 356 tonnes in 1965, 396 tonnes in 1966 and 5[illegible] tonnes in 1967.

For Tetanus Anti-toxin, the consumption was 11,600 MU in 1964, 19,900 MU in 1965, 10,000 MU in 1966 and 11,500 MU in 1967. The lower consumption in the later years is due to dwindling imports which were 15000 MU in 1965, 4,500 MU in 1966 and 5,100 MU in 1967.

The consumption of Prednisolone was 322 kgs. in 1964, 360 kgs. in 1965, 525 kgs. in 1966 and 580 kgs. in 1967.

10.4 Unitwise details of self-consumption and sales are given in Appendix VIII.

**10.5. Availability and domestic consumption for formulations :**

As has been mentioned already, formulations are based on the basic drugs and are manufactured from the specified drugs produced in the country and also those which are imported. The availability and consumption of formulations depend, therefore, entirely on the availability of basic drugs. Since the number of the formulations is very large and their applications and preparations are numerous, no attempt has been made to classify the particulars of formulations of the various drugs or to determine their volume from the point of view of total availability and consumption.

# CHAPTER 11

## FUTURE DEMAND

11 1 Some of the manufacturing units as well as the Indian Chemical Manufacturers' Association have furnished estimates of demand for the specified basic drugs for the years 1968, 1969 and 1970 The particulars of the estimates furnished by some manufacturers as well as the D G T D and the Indian Chemical Manufacturers' Association are given in Table 11 1 The figures have recently been revised again by the D G T D and the estimates furnished for each of the 18 drugs under the inquiry by the D G T D together with the Development Council's recommendations for 1970-71 are given in Table 11 2

TABLE No 11 1

*Estimates of Consumption furnished to the Commission*

| Sl No | Name of drug | Units of measurement | Year | Estimating agency | | Others | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | ICMA | D G T D | Name | Estimates | Name | Estimates |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Vitamin A | MMU | 1968 | 40 | | Roche Products | 9 55 | | |
| | | | 1969 | 40 | | Do | 9 80 | | |
| | | | 1970 | 40 | 40 | Do | 10 00 | | |
| 2 | Vitamin B12 | Kg | 1968 | 50 | | Merck Sharp | 62 | | |
| | | | 1969 | 50 | | Do | 70 | | |
| | | | 1970 | 55 | 60(A) | Do | 75 | | |

(A) Target is being reconsidered

TABLE 11.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Vitamin C . . . | Tonne | 1968 | 200 | | Sarabhai Merck | 300 | | |
| | | | 1969 | 250 | | Do. | 170 | | |
| | | | 1970 | 300 | 375 | Do. | 190 | | |
| 4 | Sulphadiazine . . . | Tonne | 1968 | N.A. | | May & Baker | 150 | Atul Products | 200 |
| | | | 1969 | N.A. | | Do. | 125 | Do. | 200 |
| | | | 1970 | N.A. | 1500(B) | Do. | 125 | Do. | 200 |
| 5 | Penicillin . . . | MMU | 1968 | 200 | | Alembic Chemical | 120 | | |
| | | | 1969 | 200 | | Do. | 165 | | |
| | | | 1970 | 200 | 250 | Do. | 181 | | |
| 6 | Streptomycin . . . | Tonne | 1968 | 200 | | Synbiotics | 250 | | |
| | | | 1969 | 230 | | Do. | 250 | | |
| | | | 1970 | 260 | 300 | Do. | 300 | | |
| 7 | Chloramphenicol . . | Tonne | 1968 | 70 | | Parke-Davis | 100 | | |
| | | | 1969 | 70 | | Do. | 70 | | |
| | | | 1970 | 70 | 100 | Do. | 80 | | |
| 8 | Tetracyclines . . . | ,, | 1968 | 100 | | Synbiotics | 100 | | |
| | | | 1969 | 120 | | Do. | 100 | | |
| | | | 1970 | 120 | 200 | Do. | 100 | | |

(B) For all sulphs drugs.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9 | Amodiaquin . | Tonne | 1968 | 60* | | Parke-Davis | 10-15 |
| | | | 1969 | 60* | | Do. | 20 |
| | | | 1970 | 60* | 120(C) | Do. | 20 |
| 10 | Chloroquin . | ,, | 1968 | 60* | | Bengal Immunity | 18 |
| | | | 1969 | 60* | | | |
| | | | 1970 | 60* | 120(C) | | |
| 11 | Iodo-chlor hydroxy-quinoline. | ,, | 1968 | 150** | | Atul Products | 80 |
| | | | 1969 | 150** | | Do | 80 |
| | | | 1970 | 150** | 200(D) | Do | 80 |
| 12 | Chlorpropamide . . | ,, | 1968 | N A. | | | |
| | | | 1969 | 20 | | | |
| | | | 1970 | 30 | 45 | | |
| 13 | Tolbutamide . . | ,, | 1968 | 30 | | Hoechst | 17 5 |
| | | | 1969 | 45 | | Do | |
| | | | | | | | 20 5 |
| | | | 1970 | 45 | 45 | Do | 22 5 |
| 14 | Insulin | MU | 1968 | 1200 | | Boots | 750 |
| | | | 1969 | 1300 | | Do | 750 |
| | | | 1970 | 1500 | 1000 | Do | 800 |

* For both Amodiaquin and Chloroquin.

** For Iodo-chlor and Di-iodo-hydroxyquinoline

(C) For all synthetic anti malarials

(D) For all halogenated oxyquinolines

TABLE 11.1—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 15 | I.N.H. . . . | Tonne | 1968 | 150 | | Synbiotics | 100 | Bengal Immunity | 300 |
| | | | 1969 | 150 | | Do. | 100 | | |
| | | | 1970 | 150 | 300 | Do. | 150 | | |
| 16 | P.A.S. . . . . | Tonne | 1968 | 700 | | | | | |
| | | | 1969 | 700 | | | | | |
| | | | 1970 | 750 | 1000 | | | | |
| 17 | Tetanus Antitoxin . . | 1000MU | 1968 | N.A. | | Bengal Immunity | 22 | | |
| | | | 1969 | N.A. | | | N.F. | | |
| | | | 1970 | N.A. | 80 (For all sera) | | N.F. | | |
| 18 | Prednisolone . . . | Kg. | 1968 | 500 | | Wyeth Labs. | 700 | Merck Sharp | 500 |
| | | | 1969 | 500 | | Do. | 650 | | N.F. |
| | | | 1970 | 500 | 900 (inclusive of pred-nisone) | Do. | 600 | | N.F. |

NOTE.—(1) ICMA has stated that the requirements of I.N.H. and P.A.S. may be much more in case the Government launches a country wide Anti-tubercular Campaign.

(2) The figures given by D.G.T.D. for 1970 are the Development Council's Targets.

TABLE 11.2

*Development Councils estimates of demand for 1970-71 and revised targets for 1973-74*

| Sl No | Name of Basic Drug | Unit | Development Council's recommendation for 1970-71 | Revised targets suggested by Development Council for 1973-74 |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| 1. | Vitamin A . . . . | MMU | 40 | 50 |
| 2 | Vitamin B12, B12(b) . | Kg | (A)60 | 150 |
| 3 | Vitamin C . . . . . | M/T | 375 | 375 |
| 4 | Sulphadiazine . . . | M/T | (B)1500 | (B)1800 |
| 5 | Penicillin . . . . | MMU | 250 | 250 |
| 6 | Streptomycin . . . . | M/T | 300 | 300 |
| 7 | Chloramphenicol . . . | M/T | 100 | 100 |
| 8 | Tetracyclines . . . | M/T | 150 | 150 |
| 9 | Amodiaquin . . . | M/T } | (C)120 | (C)120 |
| 10 | Chloroquin . . . | M/T } | | |
| 11 | Iodo- chlor & Di-iodo-hydroxy-quinoline | M/T | (D)200 | (D)150 |
| 12 | Chlorpropamide . . . | M/T | 45 } | |
| 13 | Tolbutamide . . . | M/T | 45 } | (E)105 |
| 14 | Insulin . . . . . | MU | 1000 | 1000 |

TABLE 11.2—*Contd.*

| 1 | 2 | 3 | 4 | |
|---|---|---|---|---|
| 15. | I. N. H. . . . . | M/T | 450 | |
| 16. | P. A. S. . . . . | M/T | 750 . | |
| 17. | Tetanus Antitoxin . . . | Thousand MU | (F)30 | .. |
| 18. | Prednisolone . . . . | Kg. | (G)600 | (H)1 |

NOTES.—(A) The target is being reconsidered.
(B) The target is for all Sulpha drugs.
(C) For Amodiaquin, Chloroquin and Dyrmetamine.
(D) The target is for all halogenated oxyquinoline.
(E) For Tolbutamide Chlorpropamide and Phenphormin.
(F) The target is for all sera.
(G) For both Prednisolone and Prednisone.
(H) The target is for Prednisolone, prednisone, Dexamethiasone, Cortisone and Hydrocortisone and Triamcinolone.

11.2 Some of the comments made by the units are as follows :

*Vitamin A* : Roche Products has stated that certain applications of Vitamin A are in a continuing state of development and the sales of pharmaceutically graded Vitamin A depend upon the availability of other vitamins to be used in the multi-vitamin products.

*Vitamin C* : Of late consumption of Vitamin C in India has gone up considerably according to Sarabhai Merck because of the following reasons :

1. Vitamin C is being administered in larger dosages than before and upto 500 milligram tablets.
2. It is being prescribed for ailments for which it was not suggested earlier, for example, it is now accepted that Vitamin C is good for dental disorders. It can be dissolved in a glass of water and taken every day.

It is being administered, with broad spectrum of anti-biotics.

4. So far owing to import restrictions other Vitamins were not freely allowed to be imported and as such multi-vitamin preparations cannot be made freely available to the market Under the liberalised import licensing scheme other Vitamins are now freely allowed to be imported and as such the consumption in the Country of imported vitamin preparations has gone up considerably resulting in increased requirements of Vitamin C

5. Soft drink manufacturers have also now started using Vitamin C in their products as for example coco-cola

6. Wheat treated with Vitamin C gives better yield and some farmers have already started using Vitamin C in small quantities

*Penicillin* —Hindustan Antibiotics has stated that by 1971 the estimated consumption is expected to go up by 250 MMU

*Streptomycin* —Hindustan Antibiotics expects production and estimated consumption by 1971 to go up to 300 tonnes

Synbiotics considers that the present production of Streptomycin is inadequate for the handling of anti T B programme

*Chloramphenicol* —Parke-Davis expects the consumption of Chloramphenicol to be 100 tonnes in 1970 71

*Tetracyclines* —Hindustan Antibiotics places the estimated consumption by 1971 at 150 tonnes and Synbiotics also considers that the consumption will rise steadily in future because the drug is also used in animal feeds

*Amodiaquin* —Parke-Davis considers that there would be a downward trend in the consumption of anti malarial drugs as a result of the success of the National Malaria Eradication Programme

*Tolbutamide* —With the introduction of Chlorpropamide, a larger share, that is about two-thirds has gone to this new drug according to Hoechst

*Insulin* —Boo [illegible] has stated that there [illegible] to large quantities [illegible] against N D R and American aid licences and lately [illegible] rupee payment sources through the S T C. Taking into consideration the growing uses of oral hypoglycemic drugs on the

one hand and the increasing uses of other anti-diabetics on the other, the demand for Insulin according to this unit is not likely to increase substantially.

*I.N.H.*—Synbiotics considers that the demand for I.N.H. will increase if the country undertakes to eradicate T.B. and works out a positive programme.

11.3. Compared to the capacity that already exists in the country and the capacities that are likely to be installed on the basis of the licences so far granted there would be certain imbalances as between the consumption and the installed capacity for production in the country which are revealed from the figures given in Table 11.3.

TABLE 11.3

*Consumption and future capacity for basic drugs*

| Sl. No. | Name of the basic drug | Unit | Capacity likely to be available on the basis of licences granted so far | Development Council's target for 1970-71 | Development council's revised targets suggested for 1973-74 | Col. 5 as percentage of Col. 4 | Col. 6 as percentage of col. 4 |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | Vitamin A . | MMU | 40 | 40 | 50 | 100 | 125 |
| 2 | Vitamin-B12 . | Kgs. | 65·2 | 60 | 150 | 92 | 230 |
| 3 | Vitamin-C . | Tonnes | 305 | 375 | 375 | 123 | 123 |
| 4 | Sulphadiazine . | Tonnes | 193(A) | 1500 | 1800(B) | .. | .. |
| 5 | Penicillin . . | MMU | 287 | 250 | 250 | 87 | 87 |
| 6 | Streptomycin . | Tonnes | 205 | 300 | 300 | 146 | 146 |
| 7 | Chloramphenicol | ,, | 44·8 | 100 | 100 | 223 | 223 |
| 8 | Tetracyclines . | ,, | 145·5 | 200 | 150 | 137 | 103 |
| 9 | Amodiaquin . | Tonnes | 366 | (G) | (G) | .. | .. |

TABLE 11 3—*Contd*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 10 | Chloroquin . | Tonnes | 19 | 120 | 120 | | .. |
| 11 | (a) Iodo-chlor hydroxy quinoline<br>b) Di iodo-hydroxy-quinoline | ,, | 188 4 | 200(C) | 150(C) | | |
| 12 | Chlorpropamide | , | 9 3 | 45 | 105(H) | | |
| 13 | Tolbutamide | , | 42 6 | 45 | | | |
| 14 | Insulin | MMU | 1500 | 1000 | 1000 | 67 | 67 |
| 15 | I N H | Tonnes | 443 3 | 300 | 250 | 68 | 56 |
| 16 | P A S | ,, | 452 | 1000 | 750 | 205 | 154 |
| 17 | Tetanus Antitoxin | 1000 MU | 21 8 | 80(D) | 30(D) | | |
| 18 | Prednisolone . | Kgs | 1020(E) | 900(F) | 1500(F) | | |

(A) Includes some other Sulpha Drugs
(B) For all Sulpha drugs
(C) For all halogenated oxyquinolines
(D) For all sera
(E) Includes some other corticosteroids
(F) For both Prednisolone and Prednisone
(G) Includes Dyrmethamine also
(H) Includes Phenphormine

11 4 In certain cases the figures of consumption as estimated for the future appear to be on the high side Taking into consideration the rate of consumption during the last four years, the future demand at the end of 1970 71 is likely to be lower in the case of certain drugs than estimated by the Development Council or the D G T D

11 5 A statement showing increases in domestic consumption from 1965 to 1967 with 1964 as base and our estimates of consumption for 1968, 1969 and 1970 taking into account the average annual imports for the last three years is given in Table 11.4

TABLE 11.4

*Estimated consumption of basic drugs for the three years*

| Sl. No. | Drug | Unit | Percentage of increase in consumption with 1964 as bare | | | Average annual imports for the last 3 years ('65 to '67) | Estimated rate of increase during | | | Estimated Consumption | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1965 | 1966 | 1967 | | 1968 | 1969 | 1970 | 1968 | 1969 | 1970 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1 | Vitamin A . . | MMU | (—) 2 | 6 | 7 | .. | 11 | Nil | Nil | 30 | 30 | 30 |
| 2 | Vitamin B12 . . | Kgs. | 28 | 85 | 210 | 9 | (—)10 | 10 | 10 | 60 | 70 | 80 |
| 3 | Vitamin C . | Tonnes | 88 | 238 | 297 | 153 | (—) 6 | 15 | 15 | 300 | 315 | 330 |
| 4 | Sulphadiazine . | ,, | 10 | 25 | 21 | 97 | 4 | Nil | Nil | 180 | 180 | 180 |
| 5 | Penicillin . . | MMU | (—) 4 | 28 | 33 | 43 | 5 | 20 | Nil | [illegible] | [illegible] | [illegible] |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Streptomycin | Tonnes | 21 | (—) 10 | 59 | 36 | 12 | 25 | 25 | 200 | 225 | 250 |
| 7 | Chloramphenicol | ,, | 25 | 82 | 1 | 65 | (—) 2 | 10 | 10 | 60 | 70 | 80 |
| 8 | Tetracyclines | ,, | 40 | 219 | 159 | 19 | 4 | 10 | 10 | 45 | 55 | 65 |
| 9 | Amodiaquine | ,, | (—)35 | (—)16 | (—)45 | .. | 10 | 5 | 5 | 20 | 25 | 30 |
| 10 | Chloroquin | ,, | 9 | (—)56 | 59 | 12 | (—) 2 | 3 | 3 | 20 | 23 | 26 |
| 11 | Iodo-chlorhydroxy-quinoline | ,, | 29 | 46 | 21 | | 31 | 20 | 20 | 100 | 120 | 140 |
| 12 | Chlorpropamide | ,, | 36 | 116 | 96 | 1 2 | 2 | 3 | 5 | 7 | 10 | 15 |
| 13 | Tolbutamide | ,, | 5 | 53 | 56 | 1 0 | Nil | 5 | 5 | 20 | 25 | 30 |
| 14 | Insulin | MU | (—) 6 | (—)24 | (—)23 | 200 | 217 | 50 | 50 | 800 | 850 | 900 |
| 15 | I N H | Tonnes | 78 | 51 | 21 | 20 | 32 | 20 | 20 | 100 | 120 | 140 |
| 16 | P A S | ,, | (—)12 | (—)1 | (—)10 | 62 | 38 | 50 | 50 | 400 | 450 | 500 |
| 17 | Tetanus Anti toxin | MU | 36 | (—)32 | (—)21 | 8000 | 500 | 1000 | 1000 | 12000 | 13000 | 14000 |
| 18 | Prednisolone | Kgs | 12 | 63 | 18 | 3 | 220 | 100 | 200 | 600 | 700 | 900 |

# CHAPTER 12

# RAW MATERIALS

## 12.1. Raw materials needed for basic drugs :

12.1.1. The total value of raw materials imported by the drugs and pharmaceutical industry was Rs. 9.5 crores in 1958 and accounted for 18 percent of the value of the indigenous production of the industry in that year. It came down to Rs. 8.4 crores in 1965 which works out to 6 per cent of the value of production in that year. The total value of import of drugs, intermediates and chemicals required for the manufacture of drugs and medicines amounted to Rs. 13.71 crores in 1962-63, Rs. 13.17 crores in 1963-64, Rs. 13.11 crores in 1964-65, Rs. 14.41 crores in 1965-66, Rs. 22.88 crores in 1966-67 and Rs. 27.51 crores in 1967-68. The drugs and pharmaceutical industry is included in the list of 59 priority industries for supply of raw materials to full requirements. A statement showing the raw materials needed for the 18 basic drugs under inquiry classified into raw materials imported and those which are available indigenously is given in Table 12.1.

TABLE 12.1

*List of major raw materials and intermediates and sources of supply as indicated by D. G. T. D.*

| Sl. No. | Name of the specified basic drug | Raw materials and intermediates needed | |
|---|---|---|---|
| | | Indigenous | Imported |
| 1 | 2 | 3 | 4 |
| 1 | Vitamin A . . | Beta Ionone<br>Ethyl Bromide<br>Ether<br>Methanol<br>Ammonia | Pyridine<br>Keto Acetal<br>Acetyl chloride<br>Palladium<br>Acetonitrite |

TABLE 12·1—*Contd*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| | | Cal chloride<br>Butylhydroxy Toluol<br>Hydrogen<br>Acids<br>Acetic anhydride<br>Filter aids | Butylhydroxy Anisol<br>Ethyl Palmitate<br>Filter aids<br>Lithium metal<br>Palmitoyl Chloride |
| 2 | *Vitamin B-12* | Acetone<br>Acetic Acid<br>Ammonia<br>Sulphuric Acid<br>Caustic Soda<br>Resin<br>Surface active agents<br>Alumina | Beet Molasses<br>Stearyl Alcohol<br>Sod Nitrate/Cyanide<br>Sod Molybdate<br>Filter aids<br>Cobalt nitrate |
| 3 | Vitamin C | Glucose<br>Methanol<br>Hydrochloric acid<br>Caustic Soda<br>Chlorine<br>Acetone<br>Yeast Extract<br>Carbon | |
| 4 | Sulphadiazine | Chlorosulfonic Acid<br>Decolourising agent<br>Acetanilide | Aminodiazine Pyridine |
| 5 | Penicillin . . | Butyl Acetate<br>Butyl Alcohol<br>Procaine Hcl<br>Acetone<br>Nutrients<br>Acetic acid<br>Other acids<br>Potassium Hydroxide<br>Surface active agents<br>Activated Carbon<br>Solvents | Phenyl Acetic Acid/ Sodium Salt<br>Phenyl Acetamide<br>Phenoxy Acetic Acid<br>Potassium Carbonate<br>Filter media/aids<br>Nutrients |

TABLE 12·1—*Contd.*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 6 | Streptomycin | Methanol<br>Nutrients<br>Sod. Hydroxide<br>Sod. Sulphate<br>Cal. Chloride<br>Potassium Hydroxide<br>Surface active agents<br>Solvents<br>Resins | Filter aids/media<br>Nutrients |
| 7 | Chloramphenicol | Acetic Anhydride<br>Sodium Carbonate<br>Methanol<br>Acetic Acid<br>Caustic Soda<br>Methyl Dichloro Acetate.<br>Monochlorobenzene<br>Carbon di-oxide<br>Acids<br>Hydrogen gas<br>Hexamine<br>Bromine<br>Xylene<br>Trichloroethylene<br>Surface Active agents | P-Nitro Acetophenone<br>Benzaldehyde<br>Catalysts<br>Filter aids<br>Benzyol Tartaric acid<br>Ethylene oxide<br>Iso-propyl alcohol |
| | Tetracyclines | Corn steep Liquor/starch.<br>Caustic Soda<br>Sugar<br>Butanol<br>Phosphoric Acid<br>Urea<br>Methanol<br>Acids<br>Surface active agents<br>Solvents | Arquad<br>M.I.B.K.<br>Catalysts<br>Filter aids/media<br>Nutrients |

TABLE 12·1—*Contd.*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 9 | Amodiaquin | Methanol<br>Acetone<br>Caustic Soda<br>Formalin | P-acetyl aminophenol<br>Diethylamine<br>4-7-dichloro-quinoline |
| 10 | Chloroquin | Caustic Soda<br>Acetic Acid<br>Phosphoric Acid<br>Phosphorus oxychloride<br>Decolourising agent<br>M-chloro-aniline<br>Ethylene dichloride<br>Phenol | Diphenyl oxide<br>Ethoxy methylene-Diethyl Malonate<br>Pot Carbonate<br>Diethylamino-methyl butyaline |
| 11 | Iodo-chlor-hydroxy-quinoline | Chlorine<br>Caustic Soda<br>Glycerine<br>Acids<br>Phenol | 8-Hydroxy Quinoline<br>Iodine |
| 12 | Chlorpropamide | Chlorosulfonic acid<br>Benzene<br>Caustic Soda<br>Methanol<br>Ammonia<br>Acids<br>Monochloro Benzene | Potassium Cyanate<br>N Propylamine |
| 13 | Tolbutamide | Acetic Acid<br>Alcohol<br>Carbon disulphide<br>Hydrogen peroxide<br>P-Tolyl-Sulfonyl-methyl-urethane<br>P-Toluene Sulphonamide | Butyalmine |
| 14 | Insulin | Phosphoric Acid<br>Solvents<br>Acids<br>Acetone | Pancrease gland<br>Filter aids |

TABLE 12·1—*Concld.*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 15 | I. N. H. | Caustic Soda<br>Soda Ash<br>Sulphuric Acid<br>Nitric Acid<br>Pot. Permanganate<br>Ethyl alcohol<br>Hydrazine Hydrate/ Sulphate<br>Trichloroethylene | Gamma Picoline<br>Parafomaldehyde |
| 16 | P. A. S. | Acetic Acid<br>Caustic Soda<br>Carbon dioxide<br>Surface active agents | M-Aminophenol<br>Pot. Carbonate<br>M.I.B.K. |
| 17 | Tetanus Anti-toxin | Toxoids | Proteolytic enzymes. |
| 18 | Prednisolone | Dioscorea roots<br>Soda Ash<br>Solvents<br>Methanol<br>Acetic Anhydride<br>Methylene chloride<br>Bromine<br>Acids<br>Ethylene Dichloride<br>Hydrogen Bromide<br>Chloroform | Catalysts<br>Filter aids<br>Nutrients |

12.1.2. It was mainly as a result of the increase in the availa-
ty of raw material from indigenous sources that today the value
nported raw materials constitutes about 47 per cent of the total
e of raw materials used in 1967 for the specified drugs under
inquiry.

2.1.3. The value of imported raw material as against the
of the total raw material used in 1964, 1965, 1966 and 1967
ch of the basic drugs by the different units is as given in Table

# TABLE 12 2

*Value of imported raw materials as compared with those of total raw materials used*

(Rs in thousands)

| Sl No | Name of the basic drug | Name of the Manufacturing unit | Total value of all raw materials | | | | Total value of imported raw materials | | | | Value of imported raw materials as percentage of total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1964 | 1965 | 1966 | 1967 | 1964 | 1965 | 1966 | 1967 | 1964 | 1965 | 1966 | 1967 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 1 | Vitamin A | (i) Glaxo Labs (for Vitamin A Acetate) | 24 | 13 | 973 | 1 318 | 13 | 8 | 553 | 798 | 54 | 60 | 58 | 61 |
| | | (ii) Glaxo Labs (for Vitamin A Palmitate) | 654 | 857 | | | 347 | 514 | | | 53 | 60 | | |
| | | (iii) Roche Products | 686 | 828 | 663 | 1,063 | 294 | 302 | 352 | 449 | 43 | 36 | 53 | 42 |
| | | | 1 364 | 1 698 | 1 636 | 2 381 | 654 | 824 | 905 | 1 247 | 48 | 48 | 55 | 52 |
| 2 | Vitamin B-12 and B 12(b) | (i) Glaxo Labs | | 149 | 407 | 284 | | 0 6 | 1 | 1 | | | 0 2 | 0 4 |
| | | (ii) Merck Sharp | 858 | 698 | 845 | 782 | 662 | 563 | 645 | 633 | 77 | 81 | 78 | 81 |
| | | | 858 | 847 | 1 253 | 1 066 | 602 | 565 6 | 644 | 634 | 77 | 67 | 51 | 59 |
| 3 | Vitamin C | Sarabhai Merck | 2 317 | 2 596 | 3 903 | 2 454 | 170 | 313 | 772 | 607 | 7 | 12 | 20 | 25 |
| | | | 2 317 | 2 596 | 3 905 | 2 454 | 170 | 313 | 772 | 607 | 7 | 12 | 20 | 25 |
| 4 | Sulphadiazine | (i) Atul Products | 2 053 | 2 485 | 48[illegible] | | 2 099 | 2 434 | 473 | | 98 | 98 | 98 | |
| | | (ii) May & Baker | 1 595 | 2 494 | 1 916 | 1 218 | 1 456 | 136 | 1 744 | 1 106 | 91 | 86 | 91 | 91 |
| | | | 3 648 | 4 979 | 2 399 | 1 218 | 3 4[illegible] | 4 [illegible]71 | 2 217 | 1 106 | 95 | 92 | 92 | 91 |

TABLE 12.2—*Contd.*

| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 Penicillin | (i) Alembic Chemical | 2,732 | 5,263 | 7,334 | 4,704 | 1,526 | 1,439 | 1,781 | 1,506 | 56 | 27 | 24 | 32 |
| | (ii) Hindustan Antibiotics | 5,494 | 6,549 | 8,593 | 7,881 | 1,526 | 1,430 | 2,164 | 2,248 | 28 | 22 | 25 | 29 |
| | (iii) Standard Pharmaceuticals | 1,005 | 1,137 | 1,865 | 2,619 | 383 | 481 | 956 | 683 | 38 | 42 | 51 | 26 |
| | | 9,231 | 12,949 | 17,792 | 15,204 | 3,435 | 3,350 | 4,901 | 4,437 | 37 | 26 | 28 | 29 |
| 6 Streptomycin | (i) Hindustan Antibiotics | 3,362 | 6,612 | 8,516 | 9,605 | 2,741 | 5,814 | 2,317 | 3,358 | 81 | 88 | 27 | 35 |
| | (ii) Synbiotics | 2,147 | 2,727 | 3,517 | 6,211 | 857 | 876 | 1,091 | 2,112 | 40 | 32 | 31 | 34 |
| | | 5,509 | 9,339 | 12,033 | 15,816 | 3,598 | 6,690 | 3,408 | 5,470 | 65 | 72 | 28 | 35 |
| 7 Chloramphenicol | (i) Boehringer-Knoll | 945 | 1,241 | 1,729 | 1,259 | 884 | 596 | 1,074 | 870 | 94 | 48 | 62 | 69 |
| | (ii) Parke-Davis | 1,334 | 1,737 | 1,829 | 2,756 | 1,219 | 1,612 | 1,131 | 1,824 | 91 | 93 | 62 | 66 |
| | | 2,279 | 2,978 | 3,558 | 4,015 | 2,103 | 2,208 | 2,205 | 2,694 | 92 | 74 | 62 | 67 |
| 8 Tetracyclines | (i) Cyanamid | 1,317 | 1,022 | 1,365 | 1,932 | 161 | 175 | 659 | 1,058 | 12 | 17 | 48 | 55 |
| | (ii) Hindustan Antibiotics | 30 | 47 | 38 | 78 | 22 | 29 | 2 | 12 | 73 | 62 | 5 | 15 |
| | (iii) Synbiotics | 491 | 1,118 | 1,583 | 846 | 303 | 656 | 844 | 497 | 62 | 59 | 53 | 59 |
| | (iv) Pfizer | 1,279 | 1,160 | 1,009 | 1,595 | 589 | 577 | 469 | 955 | 46 | 50 | 46 | 60 |
| | | 3,117 | 3,347 | 3,995 | 4,451 | 1,075 | 1,437 | 1,974 | 2,522 | 35 | 43 | 49 | 57 |
| 9 Amodiaquin | Parke-Davis | 706 | 884 | 1,180 | 1,522 | 702 | 879 | 998 | 1,278 | 99 | 99 | 85 | [illegible] |
| | | 706 | 884 | 1,180 | 1,522 | 702 | 879 | 998 | 1,278 | [illegible] | [illegible] | [illegible] | [illegible] |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | Chloroquin . | Bengal Immunity . | 180 | 240 | 222 | 154 | 117 | 165 | 112 | 73 | 65 | 68 | 50 | 47 |
| | | | 180 | 240 | 222 | 154 | 117 | 163 | 112 | 73 | 65 | 68 | 50 | 47 |
| 11 | Iodo-chlor-hydroxy quinoline | (i) Atul Products . | 666 | 788 | 1,226 | 578 | 435 | 562 | 947 | 450 | 65 | 71 | 76 | 78 |
| | | (ii) Bengal Chemical . | 22 | 17 | 14 | 6 | 19 | 15 | 12 | 6 | 86 | 88 | 86 | 92 |
| | | (iii) East India Pharmaceutical | 544 | 603 | 746 | 974 | 162 | 179 | 299 | 440 | 30 | 29 | 40 | 45 |
| | | | 1232 | 1408 | 1986 | 1558 | 616 | 756 | 1258 | 896 | 51 | 54 | 65 | 57 |
| 12 | Chlorpropamide | (i) Bengal Chemical . | 3 | 3 | 4 | 4 | 1 0 | 1 0 | 2 | 1 | 25 | 25 | 30 | 50 |
| | | (ii) Pfizer . . . | . | 74 | 613 | 119 | | 63 | 539 | 106 | .. | 85 | 85 | 89 |
| | | | 3 | 77 | 617 | 123 | 1 0 | 64 | 541 | 108 | 25 | 83 | 88 | 88 |
| 13 | Tolbutamide . | (i) Hoechst . | 554 | 689 | 1664 | 860 | 350 | 684 | 1657 | 857 | 99 | 99 | 99 | 100 |
| | | (ii) Haffkine . | 10 | 19 | 20 | N A | 2 0 | 5 | 3 | N A | 18 | 27 | 15 | N.A. |
| | | | 564 | 708 | 1684 | 860 | 352 | 689 | 1660 | 857 | 97 | 97 | 99 | 100 |
| 14 | Insulin . | Boots . . . | | 881 | 753 | 1082 | | 754 | 667 | 985 | | 86 | 89 | 91 |
| | | | | 881 | 753 | 1 082 | | 754 | 667 | 985 | | 86 | 89 | 91 |
| 15 | I N H . . | (i) Bengal Chemical | 57 | 29 | 9 | 3 | 35 | 17 | 8 | 3 | 61 | 59 | 88 | 82 |
| | | (ii) Bengal Immunity | 342 | 401 | 336 | 178 | 98 | 116 | 105 | 59 | 29 | 29 | 31 | 33 |
| | | (iii) Biological Evans | 288 | 427 | 349 | 118 | 189 | 262 | 180 | 64 | 63 | 61 | 52 | 54 |
| | | (iv) Pfizer . . . | 841 | 1,097 | 1 610 | 1 619 | 181 | 224 | 301 | 339 | 22 | 20 | 18 | 21 |
| | | (v) Synbiotics | 1,141 | 656 | 340 | 292 | 624 | 565 | 301 | 135 | 55 | 86 | 89 | 46 |
| | | | 2,669 | 2,610 | 2,674 | 2,240 | 1,110 | 1,184 | 895 | 600 | 42 | 45 | 53 | 27 |

TABLE 12.2—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | P.A S | (i) Biochemical & Synthetics | 1,144 | 1,323 | 1,406 | 161 | 1,231 | 1,108 | 1,281 | 1,376 | 85 | 84 | 84 | 83 |
| | | (ii) Biological Evans | 920 | 939 | 976 | 1,165 | 782 | 773 | 795 | 979 | 85 | 82 | 80 | 84 |
| | | (iii) Pfizer | 1,195 | 1,136 | 1,707 | 1,971 | 1,014 | 1,311 | 1,508 | 1,760 | 87 | 93 | 88 | 89 |
| | | | 3,559 | 3,698 | 4,089 | 4,788 | 3,057 | 3,222 | 3,487 | 4,115 | 88 | 87 | 85 | 135 |
| 17 | Tetanus Antitoxin | (i) Bengal Chemical | 11 | 15 | 27 | 29 | 4 | 5 | 2 | 3 | 36 | 33 | 6 | 10 |
| | | (ii) Bengal Immunity | 2,049 | 1,760 | 107 | *36 | 54 | 13 | 14 | *18 | 3 | 2 | 41 | 50 |
| | | (iii) Haffkine | 17 | 15 | 18 | N.A | 5 | | 3 | N A | 28 | 27 | 17 | N.A |
| | | | 2,077 | 1,790 | 152 | 65 | 63 | 52 | 49 | 21 | 3 | 3 | 32 | 32 |
| 18 | Prednisolone | (i) Glaxo Labs. | 623 | 418 | .. | N.A. | 148 | 306 | *29 | .. | 72 | 72 | .. | .. |
| | | (ii) Merck-Sharp | 918 | 105 | 59 | .. | 890 | 102 | *57 | .. | 97 | 97 | 96 | .. |
| | | (iii) Wyeth Labs. | 1,992 | 2,458 | 2,720 | 2,540 | 775 | 855 | 1,276 | 1,336 | 39 | 35 | 47 | 53 |
| | | | 3,533 | 2,981 | 2,779 | 2,510 | 2,113 | 1,262 | 1,362 | 1,336 | 60 | 42 | 49 | 53 |
| | | GRAND TOTAL | 42,646 | 54,010 | 62,706 | 61,656 | 23,300 | 28,983 | 28,054 | 28,986 | 55 | 54 | 45 | 47 |

*Relates to only six months

12.1.4 The synthetic drugs plant of I.D.P.L., Hyderabad, the Hindustan Organic Chemicals Ltd., Panvel, the National Organic Chemicals Industries Ltd., Bombay, the Atul Drug House, Bombay and Herdillia Chemicals Ltd., Bombay, will in course of time be producing intermediates and chemicals needed for the pharmaceutical industry in the current and future years. The demand for raw materials in the country is likely to be met by these units as shown in Table 12.3.

TABLE No. 12.3

*Future availability of raw materials and intermediates at present imported*

| Sl No | Name of the raw material | Name of the drug/intermediate for which used: Drug/intermediate | Demand for each in 1970/71 | Name of the unit licensed | Capacity licensed (In tonnes) | Likely dates of commencement of production (where available) |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Acetanilide | Sulphadrugs | 2000 | Hindustan Organic Chemicals (HOC) | 2 000 | 1969/70 |
| 2 | *Acetone* | Vitamin A | 40 | Herdillia Chemicals | 17 000 | July Sept 1967 |
| | | Vitamin C | 1125 | National Organic Chemicals (NOCIL) | 11 000 | End of 1968 |
| | | Amodiaquin | 18 | | | |
| | | Ephedrine | 27 | | | |
| | | | 1210 | | | |
| 3 | P Acetylaminophenol (or Paracetamol) | Amodiaquin | 20 | Burroughs Wellcome | 5 | In production |
| | | | | Chemo-Pharma | 48 | In production |
| | | | | Themis Pharmaceuticals | 10 | 1968 |
| 4 | Acetyl Chloride | Vitamin A | 4 4 | | | |

TABLE 12·3—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 5 | Aluminium Chloride | Chloramphenicol<br>D.D.S. | 3.5<br>80.0 | H.O.C. | 3,000 | 1969/70 |
| | | | 83.5 | | | |
| 6 | O-Aminophenol | Iodo-chlor & Di-Iodo-hydroxy-quinoline | 78 | Chemo-Pharma | 77 | |
| 7 | M-Aminophenol | P.A.S. | 700 | H.O.C. | 750 | |
| 8 | 2-Aminopyridine | Sulphadiazine | 250 | | | |
| 9 | Arquad 16(c) | Tetracyclines | 516 | | | 1969-70 |
| 10 | Beet Molasses | Vitamin B12 | 400 | | | |
| 11 | Benzaldehyde | Chloramphenicol<br>Ephedrine | 187<br>75 | Aniline Dyestuff & Pharma<br>Ashok Investment | 60<br>360 (Letter of Intent) | .. |
| | | | 262 | | | |
| 12 | N-Butylamine | Tolbutamide | 22.5 | Dikshit Chem & Eng. Co. | 40 (Letter of Intent) | |
| | | | | | 460 | |
| 13 | Capryl Alcohol | Vitamin B12 | 1.6 | | | |
| 14 | Cellosolve (Ethyl cellosolve) | Tetracylines | 606 | N.A. | 2500 (Letter of In- | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15 | P Chlorobenzene Sulphonamide | Chlorpropamide . | 45 | | | |
| 16 | Citric Acid | Tetracyclines | 51 | Citric India Ltd . | 1500 | |
| 17 | Cobalt Nitrate | Vitamin B12 . | 0 8 | Techmico Enterprise, Calcutta | 0 8 | .. |
| 18 | 4-7 D chloro-quinol ne | Amodiaquin | 20 | | | |
| 19 | Diethylamine | Amodiaquin | 13 0 | IDPL . . . | 25 5 (Available for sale 18 4 tonnes) | 1963 |
| | | Diethylcarbamazine | 11 0 | | | |
| | | Xylocaine . . | 2 4 | | | |
| | | Nikethamide . . | 13 0 | | | |
| | | Diethylaminoethanol | 75 0 | | | |
| | | | 114 4 | | | |
| 20 | 4 D ethylaminol methyl butylamine | Chloroquin . . | 30 | | | |
| 21 | Diethyl ethoxy methylene Molenec ester | Chloroquin . . | 66 | | | |
| | | Amodiaquin . | 44 | | | |
| | | | 110 | | | |
| 22 | Diphenyl oxide | Chloroquin . | 100 | (Only as a bye product from the phenol plant of Durgapur Chemicals) | | |
| | | Amodiaquin . . | 66 | | | |
| | | | 166 | | | |

| | | | | | |
|---|---|---|---|---|---|
| 27 Formic Acid | P A S & Esters | 45 | Dr Paul Lohman P Ltd | 600 | 1969 |
| | Diethylcarbamazine | 2 5 | | 390 (Res 1) | 1968 |
| | Vitamin B-1 | 250 | Aspinall & Co | | |
| | Hydrochlorthiazide | 50 | | | |
| | | 347 5 | | 1590 | |
| 28 Hexamethylene tetramine | Chloramphenicol | 67 | Atul Drug | 300 | In production |
| | | | Allied Resin & Chem | 690 | 1960 |
| | | | | 20 5* | 1968 |
| 29 Hydrazine Hydrate | I N H | 225 | (IDPL) | 620 5 | |
| | Thiacetazone | 45 | (*Available for sale 18 2 tonnes) | | |
| | | 270 | | | |
| 30 Iodine | Iodo-Chlor and Di Iodo-Hydroxy quinoline | 100 | | | |
| 31 Isopropyl Alcohol | Chloramphenicol | 386 | NOCIL | 1500 | End 1967 |
| | Tetracyclines | 150 | | | |
| | | 536 | | | |
| 32 Keto Acetol | Vitamin A | 0 8 | | | |
| 33 Lithium Metal | Vitamin A | 0 8 | | | |
| 34 Magnesium Metal | Vitamin A | 2 5 | | | |

TABLE 12·3—*Contd.*

| | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 35 | Methyl Isobutyl-Ketone (M.I.B.K.) | Tetracyclines | 375 | NOCIL | 3700 | End 1967 |
| | | P.A.S. & Esters | 45 | | | |
| | | Tolbutamide | 45 | | | |
| | | Chlorpropamide | 45 | | | |
| | | | 510 | | | |
| 36 | P-Nitroacetophenone | Chloramphenicol | 69 | | | |
| 37 | O-Nitrophenol | Iodo-chlor & Di-Iodo-hydroxy quinoline. | 50 | Chemo-Pharma | 77 (C-amino/nitro Phenol) | |
| | | D-Aminophenol | 127 | | | |
| | | | 177 | | | |
| 38 | Palladium Catalyst | Tetrayclines | 15 | | | |
| 39 | Palladium Chloride | Chloramphenicol | 0.4 | | | |
| 40 | Palmitoyl Chloride | Vitamin A | 9.1 | | | |
| 41 | Pancreas | Insulin | 400 | | | |
| 42 | Paraformaldehyde | Vitamin A | 10 | Atul Drug | | |
| 43 | Phenol | Chloroquin | 24 | Herdillia Chemicals | 450 | 1968 |
| | | Iodo-chlor and Di-Iodo-hydroxy-quinolines. | 160 | Durgapur Chemicals | 10,000 to 15,000 | April-June 1968 |
| | | | | Neyveli Lignite Corpn. | 6,600 | End 1967 |
| | | Salicylic Acid | 1500 | | 1,340 | In operation |
| | | Bephenium Hydro-Oxynaphthoate. | 2.6 | | | |
| | | | 1686.6 | | 17,940 to 22,940 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 44 | Phenoxy Acetic Acid | Penicillin | 53 | D kshit Chem & Engg Co | 94 | 226 | No Progress |
| 45 | Phenylacetamide | " | | Aniline Dyestuff | 78 | | " |
| 46 | Phenylacetic acid | | | Hyderabad Chemicals | 54 | | End 1969 |
| 47 | Beta Picoline | I N H | 365 | Warner | 127 | | Can produce more |
| 48 | Potassium Carbonate | P A S & Esters | 700 | | | | |
| | | Penicillin | 135 | | | | |
| | | | 835 | | | | |
| 49 | Potassium Cyanate | Tolbutamide | 45 | | | | |
| | | Chlorpropamide | 25 | | | | |
| | | | 60 | | | | |
| 50 | Potassium Borohydride | Vitamin A | 1 | | | | |
| 51 | Potassium Phenylacetate | Penicillin | 500 | | | | |
| 51 | Procaine Hcl | Penicillin | 150 | Hoechst | 40-60 | | |
| | | | | Sarabhai | 30 | | |
| 53 | n-propylamin | Chlorpropamide | 15 | | | | |
| 54 | Pyridine | Sulpha Drugs | 150 | Warner | 72 5 | | |
| 55 | Sod Benzoate | Vitamin A | 8 | Aniline Dyestuff | 60 | | No progress |
| | | | | Hyderabad Chemicals | 96 | | End 1968 |
| | | | | | 156 | | |

TABLE 12·3—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 56 | Sodium Cyanide | Vitamin B12 | 1 | | | |
| | | Phenobarbiton | 14 | | | |
| | | | 15 | | | |
| 57 | Sodium Nitrate | Vitamin B12 | 18 | | | |
| 58 | Trichloroethelene | Chloramphenicol | 40 | Dhrangadhra Chemical | 5400 | 1969 |
| | | Emetlıc [sic] | 16 | Ahmedabad Mfg. and Calico. | 3000 | 1967 |
| | | Bephenium | | | | |
| | | Hydroxy Naphthoate | 5 | | | |
| | | Phenylbutazone | 6 | | | |
| | | | 67 | | 8400 | |
| 59 | p-Toluensulphonamide | Tolbutamide | 45 | | | |
| 60 | Thionyl Chloride | Procaine Hcl (For Penicillin). | 85 | | | |
| | | Pethidine | 5 | | | |
| | | Hydrochlorothazide 4-Diethylamino-1 | 110 | | | |
| | | Metyl butylamine (For chloroquine). | 30 | | | |
| | | | 230 | | | |

12 1 5 For raw materials of which indigenous supplies are available, imports need to be discouraged, even if the cost of the imported material is lower than that of the indigenous chemicals Where the indigenous supply needs to be supplemented by partial imports, it would be desirable to ensure that some system of polling is attempted so that the raw material is available at the same rate to the different manufacturers and there is no unfair advantage to a particular manufacturer which is not available to the rest In so far as those materials are concernrd, the capacity for the production of which is not likely to be set up in the near future, we consider that concessional rates of duty should be introduced so that the indigenous cost of production is not unnecessarily loaded with the burden of high import duty Even if considerations of revenue supervene it would be desirable to impose the levy in the form of an excise duty rather than as import duty The following chemicals and intermediates mentioned in Table 12 4 may therefore be allowed to be imported at concessional rates of duty until such time as indigenous capacity has been set up It would be desirable to permit import at concessional rates only in respect of specific raw materials and intermediates which are needed by the pharmaceutical industry.

TABLE 12 4

*List of chemicals and intermediates for which capacity may not be established in the near future*

| Sl No | Name of the raw material | Name of the drug/ Intermediate for which used | Demand expected in 1970 71 |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1 | Acetyl Chloride | Vitamin A | 4 4 tonnes |
| 2 | Arquad 16(c | Tetracyclines | 516 tonnes |
| 3 | Beet molasses | Vitamin B12 | 400 tonnes |
| 4 | n Butylamine | Tolbutamide | 22 5 tonnes |
| 5 | 4 Diethylamino l- methyl butylamine | Chloroquin | 30 |
| 6 | Diethyl ethoxy methylene meloc esters | Chloroquin<br>Amodaquin | 66<br>44 |

TABLE 12·4—*Contd.*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 7 | Iodine . . . . | Iodochloro and Di-iodo-hydroxy-quinoline | 100 tonnes |
| 8 | P-Nitro-acetophenone . | Chloramphenicol | 60 tonnes |
| 9 | Palladium Catalyst . | Tetracyclines | 15 tonnes |
| 10 | Palladium chloride . | Chloramphenicol | 0·4 tonne |
| 11 | Pancreas . . . | Insulin | 400 tonnes |
| 12 | Potassium cyanate . | Chlopropamide<br>Tolbutamide | 23 tonnes<br>45 tonnes |
| | | | 68 |
| 13 | Potassium Borohydride . | Vitamin A | . . 1 tonne |
| 14 | Potassium Phenylacetate . | Penicillin | 500 tonnes |
| 15 | Sodium Cyanide . . | Vitamin B12<br>Phenobabitone | 1 tonne<br>14 tonnes |
| | | | 15 tonnes |
| 16 | Sodium Nitrate . . | Vitamin B12 | 18 tonnes |
| 17 | Thinoyl chloride . . | Procaine Hcl (For Penicillin) | 85 tonnes |
| | | Pethidine | 5 tonnes |
| | | Hydrochloro-thiazide | 110 tonnes |
| | | 4. Diethylamino-1-methyl butylamine for chloroquin | 30 tonnes |
| | | | 230 tonnes |

12.1.6. In the course of the examination of the prices of raw materials for the future estimates it was discovered that there was considerable disparity between one unit and another. Particulars given in Table 12.5 would show the prices suggested for

inclusion in the estimates by the different units It was therefore decided to adopt generally the minimum prices wherever these were verified and found correct In the light of these significant disparities which we discovered and which are also likely to have existed in the case of the costs for the actual period we suggest that the manufacturing unit may exercise greater care in obtaining raw materials at the most economical rates One of the reasons for disparity and sometimes of high cost of imports of raw materials and intermediates was the conditions under which imports were effected Actual users licences allowed are of three categories, viz, (i) tied loans, (2) rupee payment areas and (3) general currency areas In all the three areas Government normally specify a price ceiling up to which imports can be effected Sometimes it is possible to obtain raw materials more cheaply from a source other than the source specified for a particular unit or industry. Transfer of the licence can be made if a surplus is available under the category to which transfer is desired But since there is usual saturation in categories which are cheaper sources of raw material, there is no choice but to purchase from the allotted area, even if higher price has to be paid

TABLE 12 5

*Latest rates of materials for common items adopted for estimating fair selling prices of basic drugs*

| Sl No | Name of raw materials/intermediate | Unit of computation | Name of the manufacturer | Price paid (Rs) |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| A *Imported materials* | | | | |
| 1 | Acetic Anhydride | Kg | (i) Parke Davis | 4 51 (For Technical grade) |
| | | | (ii) Wyeth Labs | 3 52 |
| 2 | Acetone . . . | Lit | (i) Roche Products | 5 00 |
| | | | (ii) Sarabhai Merck | 3 29 |
| | | | (iii) Merck Sharp | 2 43 |
| | | | (iv) Wyeth Labs | 2 19 |

TABLE 12·5—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 3 | Actanol . . . | Kg. | (i) Synbiotics | 13·29 |
| | | | (ii) Pfizer | 8·18 |
| 4 | Activated Carbon . | Kg. | (i) Sarabhai Merck | 19·32<br>7·38 |
| | | | (ii) Hindustan Antibiotics | 17·97<br>7·88 |
| | | | (iii) Pfizer | 14·26 |
| | | | (iv) Wyeth Labs. | 5·57 |
| | | | (v) May & Baker | 3·68 |
| 5 | Arquad . . . | Kg. | (i) Pfizer | 8·43 |
| | | | (ii) Cyanamid | 7·90 |
| 6 | Benzaldehyde . | Kg. | (i) Boehringer-Knoll | 8·01 |
| | | | (ii) Parke-Davis | 5·36<br>(For Technical grade) |
| 7 | Dicalite . . . | Kg. | (i) Alembic Chemical | 2·28 |
| | | | (ii) Boots | 1·99 |
| | | | (iii) Synbiotics | 1·94 |
| 8 | Ethylene Dichloride . | Kg. | (i) Bengal Immunity | 3·58 |
| | | | (ii) Wyeth Labs. | 3·24 |
| 9 | Gamma Picoline . | Kg. | (i) Pfizer | 9·20 |
| | | | (ii) Biological Evans | 8·90 |
| 10 | Hydrazine Hydrate . | Kg. | (i) Biological Evans | 14·25 |
| | | | (ii) Suneeta Labs. | 13·30 |
| 11 | Hyflo Supercel . | Kg. | (i) Roche Products | 4·52 |
| | | | (ii) Biological Evans | 2·13 |
| | | | (iii) Cyanamid | 1·99 |
| | | | (iv) Alembic Chemical | 1·91 |
| | | | (v) Parke-Davis | 1·88 |
| | | | (vi) Synbiotics | 1·84 |
| | | | (vii) Pfizer | 1·79<br>1·61<br>1·58 |
| | | | (viii) Hindustan Antibiotics | 1·19 |

TABLE 12·5—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 12 | Iodine . . . | Kg. | (i) Neogy Labs | 28 26 |
| | | | (ii) East India Pharmaceutical | 25 63 |
| 13 | Isopropyl Alcohol . | Lit. | (i) Pfizer | 3 24 |
| | | | (ii) Wyeth Labs. | 2 65 |
| | | | (iii) Parke-Davis | 2·50 |
| 14 | Lard Oil . . . | Lit. | (i) Pfizer · | 6 55 |
| | | | (ii) Cyanamid | 5 94 |
| | | | (iii) Wyeth Labs | 4 59 |
| 15 | Meta Amino Phenol . | Kg | (i) Wander | 18 58 |
| | | | (ii) Biological Evans | 17 51 |
| | | | (iii) Biochemical & Synthetic | 17 20 |
| | | | (iv) Pfizer | 16 15 |
| 16 | Methanol . . . | Kg | (i) Roche Products | 4 20 |
| | | | (ii) Sarabhai Merck | 3 08 |
| 17 | Methyline . . | Kg | (i) Wyeth Labs | 3 95 |
| | | | (ii) Roche Products | 3 55 |
| 18 | M.I B K. . . | Kg | (i) Biological Evans | 4 96 |
| | | | (ii) Cyanamid | 4 67 |
| | | | (iii) Suneeta Labs | 4 64 |
| 19 | Phenyl Acetic Acid . | Kg | (i) Hindustan Antibiotics | 18 14 |
| | | | (ii) Alembic Chemical | 12 92 |
| 20 | Potassium Carbonate . | Kg | (i) Hindustan Antibiotics | 3 11 |
| | | | (ii) Wander | 3 07 |
| | | | (iii) Biochemical & Synthetics | 2 86 |
| | | | (iv) Pfizer | 2·66 |
| | | | (v) Biological Evans | 1 59 |
| 21 | Pyridine Pure . | Kg | (i) May & Baker | 15 68 |
| | | | (ii) Wyeth Labs | 14 96 |
| 22 | Resin IRC 50 . . | Kg | (i) Merck Sharp | 45 89 |
| | | | (ii) Synbiotics | 39 50 |
| | | | (iii) Hindustan Antibiotics | 38 95 |

TABLE 12.5—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 23 | Trichloro Ethylene . | Kg. | (i) Pfizer | 2·80 |
| | | | (ii) Biological Evans | 2·40 |
| 24 | Triethylamine . . | Kg. | (i) Pfizer | 11·32 |
| | | | (ii) Cyanamid | 7·28 |
| B. *Indigenous materials* | | | | |
| 1 | Acetic Acid . . | Kg. | (i) Cyanamid | 14·61 |
| | | | (ii) Bengal Immunity | 3·35 |
| | | | (iii) Pfizer | 3·07 |
| | | | (iv) Hoechst | 2·88 |
| | | | (v) Biological Evans | 2·61 |
| | | | (vi) Biochemical & Synthetic | 2·60 |
| | | | (vii) BoehringerKnoll | 2·50 |
| | | | (viii) Sarabhai Merck | 2·45 |
| | | | (ix) Hindustan Antibiotics | 1·50 |
| 2 | Acetic Acid Glacial . | Kg. | (i) Boehringer-Knoll | 2·85 |
| | | | (ii) May & Baker | 2·84 |
| | | | (iii) Wyeth | 2·50 |
| | | | (iv) Roche Products | 2·45 |
| | | | (v) Merck Sharp | 2·45 |
| 3 | Acetone . . . | Lit. | (i) Glaxo Labs. | 33·47 |
| | | | (ii) Hindustan Antibiotics | 3·25 |
| | | | (iii) Parke-Davis | 2·80 |
| 4 | Activated Carbon . | Kg. | (i) Pfizer | 11·79 |
| | | | (ii) Sarabhai Merck | 3·41<br>11·00<br>5·41 (Supra) |
| | | | (iii) Parke-Davis | 4·49 |
| | | | (iv) Biochemical & Synthetic | 3·57 |
| | | | (v) Boehringer-Knoll | 2·50 |
| | | | (vi) Biological Evans | 1·59 |
| | | | (vii) Hindustan Antibiotics | 1·50 |

TABLE 12.5—*Contd*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 5 | Ammonia . . | Lit | (i) Biological Evans | 5 25 |
| | | | (ii) Cyanamid | 2 83 |
| | | | (iii) Biochemical & Synthetic | 2 67 |
| | | | (iv) Merck Sharp | 1 73 |
| 6 | Ammonia Chloride . | Kg. | (i) Pfizer | 1 35 |
| | | | (ii) Cyanamid | 0 97 |
| | | | (iii) May & Baker | 0 94 |
| 7 | Ammonia Solution . | Lit. | (i) Cyanamid | 14 61 |
| | | | (ii) Sarabhai Merck | 3 80 |
| | | | (iii) Synbiotics | 0 85 |
| | | | (iv) Hindustan Antibiotics | 0 67 |
| 8 | Ammonia Sulphate . | Kg. | (i) Sarabhai Merck | 9 18 |
| | | | (ii) Cyanamid | 3 93 |
| | | | (iii) Synbiotics | 0 85 |
| | | | (iv) Hindustan Antibiotics | 0 67 |
| | | | (v) Biological Evans | 0 50 |
| | | | (vi) Pfizer | 0 43 |
| | | | (vii) Bengal Immunity | 0 35 |
| 9 | Benzene . . . | Lit | (i) Cyanamid | 1 81 |
| | | | (ii) Bengal Immunity | 1 80 |
| | | | (iii) Sarabhai Merck | 1 18 |
| | | | (iv) Hindustan Antibiotics | 1 18 |
| | | | (v) Alembic Chemical | 0 93 |
| | | | (vi) Alliance Trading | 0 93 |
| | | | (vii) May & Baker | 0 91 |
| 10 | Butyl Acetate . | Kg. | (i) Alembic Chemical | 5 62 |
| | | | (ii) Hindustan Antibiotics | 5 00 |
| 11 | Butyl Alcohol . . | Kg. | (i) Alembic Chemical | 5 71 |
| | | | (ii) Hindustan Antibiotics | 4 85 |
| 12 | Calcium Carbonate . | Kg. | (i) Cyanamid | 1 63 (Heavy) 1 43 (Light) |
| | | | (ii) Pfizer | 1 15 |
| | | | (iii) Alembic Chemical | 1 09 |

TABLE 12.5—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 13 | Carbon Dioxide | Kg. | (i) Pfizer | 1.27 |
| | | | (ii) Biological Evans | 1.03 |
| | | | (iii) Biochemical & Synthetic | 1.00 |
| | | | (iv) Boehringer-Knoll | 0.77 |
| | | | (v) Wander | 0.75 |
| 14 | (a) Caustic Soda Lye | Kg. | (i) Cyanamid | 1.18 |
| | | | (ii) Synbiotics | 1.18 |
| | | | (iii) Sarabhai Merck | 1.15 |
| | | | (iv) Biological Evans | 1.00 |
| | | | (v) Hindustan Antibiotics | 0.95 |
| | | | (vi) East India Pharmaceutical | 0.42 |
| | (b) Caustic Soda Flakes | Kg. | (i) Alliance Trading | 1.70 |
| | | | (ii) Pfizer | 1.54<br>1.43<br>1.34 |
| | | | (iii) May & Baker | 1.42 (For Technical grade)<br>0.94 |
| | | | (iv) Alembic Chemical | 1.19 |
| | | | (v) Cyanamid | 1.18 |
| | | | (vi) Synbiotics | 1.18 |
| | | | (vii) Hindustan Antibiotics | 0.95 |
| | | | (viii) East India Pharmaceutical | 0.42 |
| | (c) Caustic Soda Pure | Kg. | (i) Pfizer | 5.90 |
| | | | (ii) Alliance Trading | 1.70 |
| | | | (iii) Wyeth Labs. | 1.64 |
| | | | (iv) Boehringer-Knoll | 1.28 |
| | | | (v) Alembic Chemical | 1.19 |
| | | | (vi) Biochemical & Synthetic | 1.10 |

TABLE 12.5—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | (d) Caustic Soda Solution | Kg. | (i) Pfizer | 0 93<br>0 48 |
| | | | (ii) Boehringer Knoll | 0 90 |
| | | | (iii) Bengal Immunity | 0 45 |
| 15 | Corn Steep liquor . | Kg. | (i) Biochemical & Synthetic | 0 88 |
| | | | (ii) Pfizer | 0 88 |
| | | | (iii) Alembic Chemical | 0 87 |
| | | | (iv) Wyeth Labs | 0 83 |
| | | | (v) Cyanamid | 0 79 |
| | | | (vi) Synbiotics | 0 78 |
| 16 | Chlorine . . . | Kg | (i) Neogy Labs | 1 37 |
| | | | (ii) Alembic Chemical | 1 34 |
| | | | (iii) Alliance Trading | 1 34 |
| | | | (iv) East India Pharmaceutical | 1 09 |
| | | | (v) Synbiotics | 0 45 |
| 17 | Corn Steep Concentrate. | Kg. | (i) Hindustan Antibiotics | 0 50 |
| 18 | Chlorine Gas . . | Kg | (i) Hindustan Antibiotics | 0 49 |
| | | | (ii) Cyanamid | 0 45 |
| | | | (iii) Merck Sharp | 0 41 |
| | | | (iv) Sarabhai Merck | 0 41 |
| 19 | Denatured Spirit . | Lit. | (i) Pfizer | 1 65 |
| | | | (ii) Merck Sharp | 1 31 |
| | | | (iii) Sarabhai Merck | 1 13 |
| | | | (iv) Biological Evans | 1 00 |
| | | | (v) Wander | 0 71 |
| | | | (vi) Biochemical & Synthetic | 0 67 |
| | | | (vii) Hindustan Antibiotics | 0 55 |
| 20 | Dextrose . . . | Kg | (i) Alembic Chemical | 3 48 |
| | | | (ii) Synbiotics | 3 34 |
| | | | (iii) Sarabhai Merck | 3 34 |
| | | | (iv) Wyeth Labs | 3 23 |
| | | | (v) Hindustan Antibiotics | 2 41 |

TABLE 12.5—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 21 | Formaldehyde | Kg. | (i) Hindustan Antibitotics | 1·36 |
| | | | (ii) Synbiotics | 1·35 |
| 22 | Ground Nut Meal Powder. | Kg. | (i) May & Baker | 0·60 |
| | | | (ii) Alembic Chemical | 0·55 |
| | | | (iii) Hindustan Antitoitics | 0·50 |
| | | | (iv) Wyeth Labs. | 0·20 |
| 23 | Ground Nut Oil . | Kg. | (i) May & Baker | 5·64 |
| | | | (ii) Cyanamid | 5·62 |
| | | | (iii) Alembic Chemical | 3·50 |
| | | | (iv) Hindustan Antibiotics | 3·26 |
| 24 | Hydrated Lime . | Kg. | (i) May & Baker | 0·20 |
| 25 | Hydrochlorine Acid . | Kg. | (i) Cyanamid | 1·81 |
| | | | (ii) Pfizer | 1·24 |
| | | | (iii) Parke-Davis | 1·23 |
| | | | (iv) Neogy Labs. | 1·17 |
| | | | (v) Wyeth Labs. | 1·06 |
| | | | (vi) Alembic Chemical | 0·95 |
| | | | (vii) Alliance Trading | 0·95 |
| | | | (viii) Biochemical & Synthetic | 0·40 |
| | | | (ix) Bengal Immunity | 0·26 |
| | | | (x) Biological Evans | 0·26 |
| | | | (xi) Hindustan Antibiotics | 0·12 |
| | | | (xii) Wander | 0·10 |
| 26 | A. Lemon Grass Oil | Kg. | Roche Products | 33·66 |
| 26 | B. Hydrochloric Acid (Comml.) | Kg. | (i) Sarabhai Merck | 0·17 (VB6) |
| | | | (ii) Parke-Davis | 0·12 |
| | | | (iii) Pfizer | 0·12 |
| | | | (iv) Hindustan Antibiotics | 0·12 |
| | | | (v) Wander | 0·10 |
| 27 | Manganese Sulphate | Kg. | (i) Cyanamid | 14·02 |
| | | | (ii) Pfizer | 4·44 |

TABLE 12.5—*Contd*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 28 | Methanol | Lit | (i) Pfizer | 3 |
| | | | (ii) Cyanamid | 3 |
| | | | (iii) Boehringer-Knoll | 3 |
| | | | (iv) Suneeta Labs | 2 |
| | | | (v) Hoechst | 1 |
| | | | (vi) Hindustan Antibiotics | 1 |
| | | | (vii) Wyeth Labs | 1 |
| 29 | Methyl Alcohol . | Lit. | (i) Bengal Immunity | 3 |
| | | | (ii) Parke-Davis | 1 |
| 30 | Nitric Acid . . | Kg. | (i) Boehringer Knoll | 2 |
| | | | (ii) East Indian Pharmaceutical | 1 |
| | | | (iii) Synbiotics | 1 [illegible] |
| 31 | Nitrogen Gas . . | Cy. | (i) Sarabhai Merck | 14 1 |
| | | Cy. | (ii) Wyeth Labs | 11 [illegible] |
| | | Cm | (iii) Cyanamid | 3 3 |
| | | Cm | (iv) Boehringer-Knoll | 1 8 |
| | | Cm | (v) Hindustan Antibiotics | 1 3 |
| 32 | Non-absorbant Cotton | Kg. | (i) Hindustan Antibiotics | 4 9 |
| 33 | Phosphoric Acid . | Kg | (i) Boots | 6 9 |
| | | | (ii) Bengal Immunity | 4 3 |
| | | | (iii) Hoechst | 4 0 |
| | | | (iv) Hindustan Antibiotics | 2 5 |
| 34 | Rectified Spirit . | Lit | (i) Bengal Immunity | 0 7 |
| 35 | Rongalite . . . | Kg | (i) Biological Evans | 8 3 |
| | | | (ii) Biochemical & Synthetic | 7 7 |
| 36 | Soda Ash . . . | Kg | (i) Pfizer | 0 6 |
| | | | (ii) Biological Evans | 0 5 |
| | | | (iii) Synbiotics | 0 5 |
| | | | (iv) Hindustan Antibiotics | 0 5 |
| | | | (v) Sarabhai Merck | 0 5 |

TABLE 12.5—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 37 | Sodium Carbonate . | Kg. | (i) Alliance Trading | 16·50 |
| | | | (ii) Sarabhai Merck | 9·11 |
| | | | (iii) Boehringer-Knoll | 0·90 |
| | | | (iv) Alembic Chemical | 0·90 |
| | | | (v) Neogy Labs. | 0·70 |
| 38 | Sodium Citrate . . | Kg. | (i) Biological Evans | 18·80 |
| | | | (ii) Bengal Immunity | 7·35 |
| 39 | Sodium Chloride | Kg. | (i) Wyeth Labs. | 1·55 |
| | | | (ii) Synbiotics | 1·24 |
| | | | (iii) Wander | 0·97 |
| | | | (iv) Boots | 0·29 |
| | | | (v) Biochemical & Synthetic | 0·20 |
| | | | (vi) Hindustan Antibiotics | 0·13 |
| 40 | Sodium Chloride Desalt | Kg. | (i) Parke-Davis | 0·51 |
| | | | (ii) Biochemical & Synthetic | 0·20 |
| | | | (iii) Hindustan Antibiotics | 0·13 |
| 41 | Sodium Hydro Sulphate | Kg. | (i) Pfizer | 9·20 |
| | | | (ii) Biochemical & Synthetic | 8·50 |
| | | | (iii) Biological Evans | 8·45 |
| | | | (iv) Wander | 7·75 |
| | | | (v) Boehringer-Knoll | 7·62 |
| | | | (vi) Wyeth | 2·50 |
| 41 | A. Sodium Hydroxide (Commercial) | Kg. | (i) Alliance Trading | 16·50 |
| | | | (ii) Merck Sharp | 5·64 |
| | | | (iii) Synbiotics | 1·24 |
| | | | (iv) Parke-Davis | 1·21 |
| | | | (v) Wander | 0·97 |
| | | | (vi) Hindustan Antibiotics | 0·92 |
| 42 | Sodium Sulphate . | Kg. | (i) Wyeth Labs. | 1·43 |
| | | | (ii) Parke-Davis | 0·94 |
| | | | (iii) Alembic Chemical | 0·91 |

TABLE 12.5—*Concld.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 43 | Sugar . . . . | Kg | (i) East India Pharmaceutical | 5 65 |
| | | | (ii) Alemb c Chemical | 1 67 |
| | | | (iii) Synbiotics | 1 53 |
| | | | (iv) Hindustan Antibiotics | 1 32 |
| 44 | Sulfarethane . . | Kg | (i) Hoechst | 58 30 |
| 45 | Sulphuric Acid . . | Kg | (i) Pfizer | 1 42<br>0 69<br>0 62 |
| | | | (ii) Biochemical & Synthetic | 1 00 |
| | | | (iii) Biological Evans | 0·79 |
| | | | (iv) Wyeth Labs | 0 74 |
| | | | (v) Sarabhai Merck | 0 66 |
| | | | (vi) Cyanamid | 0 59 |
| | | | (vii) East India Pharmaceutical | 0 50 |
| | | | (viii) Synbiotics | 0 47 |
| | | | (ix) May & Baker | 0 40 |
| | | | (x) Hindustan Antibiotics | 0 32 |
| 46 | Sulphuric Acid (Comml.) | Kg | (i) Merck Sharp | 0 39 |
| 47 | Urea . . . . | Kg | (i) Cyanamid | 1 45 |
| | | | (ii) Pfizer | 1 09<br>0·75 |
| | | | (iii) Boehringer-Knoll | 0 96 |

## 12.2. Problems of manufacturers :

12.2.1. The Indian Chemical Manufacturers' Association has listed a number of difficulties encountered by manufacturers of drugs in respect of raw materials. It has been stated that imports of intermediates and raw materials have become very difficult because of the scarcity of foreign exchange, particularly after devaluation. Besides this, these chemicals have become expensive resulting in high cost of production of finished drugs. In the case of phyto-chemicals the position is said to be worse than that of drugs which are produced from synthetic materials.

The plant which was expected to be set up in Kerala is not li
to be set up now. The D.G.T.D. has informed us that steps h
since been taken to set up farms for scientific cultivation of medici
plants and to organise proper collection of those which gr
wild. From Dioscorea root diosgenin is being extracted by tw
firms in Bombay and being converted into steroid intermediat
and hormones, substantial quantities of which are also being ex
ported. The two State Government factories produce quinine
from cinchona grown in organised cinchona plantations. The
exports of quinine have also earned sizeable foreign exhange
for the country. Farms have been started for Ipecac in Mungpoo,
Darjeeling District in West Bengal and Emetine produced from
the same is also being exported. New farms have been set up in
Mannar in Kerala for digitalis and for podophyllum in the Kashmir
valley. In addition, items like caffeine from tea waste and strychnine and brucine from nux vomica seeds, Berberine from barberis bark and sennosides from senna pods are being produced. Many other farms for medicinal plants are also coming up with the assistance of the Central Indian Medicinal Plants Organisation and extraction of active principals being undertaken.

12.2.2. Some of the problems mentioned in connection with he raw materials needed for basic drugs are as follows :

(i) Owing to lack of proper facilities for refrigeration at slaughter houses and lack of the requisite transport equipment, movement of easily perishable glands has become very difficult. The availability of raw materials for glandular products is therefore unsatisfactory. (ii) The manufacture of anti-biotics requires the imports of such items as soyabeans, anti-foam oil, percursors, Diatomous earth and active charcoal. No effort has so far been made to grow soyabean in the country. The quality of carbon made within the country is unsatisfactory for utilisation in the production of antibiotics. The Indian Chemical Manufacturers' Association has also complained that in spite of various efforts of antibiotics' manufacturers the active carbon manufacturers could not be persuaded to produce carbon of the required quality. (iii) Even in the case of indigenously manufactured raw materials the prices have been going up steadily. The cost of dextrose and starch has doubled in the last three years. Even for these products hybrid maize

has to be imported Elaborate procedures for obtaining permits for movement of sugar also create hindrances in obtaining the materials which are produced indigenously Actual delivery is made between three to four weeks after the release order and delay upsets the production programme It has been suggested that release orders may be issued in such a way that some stocks are available and that these are replenished from time to time without facing shortages (iv) The State Trading Corporation having failed to make timely purchases of sulphur the production and supply of sulphuric acid has received a setback The price of this item at the end of 1966 was Rs 258 per tonne [illegible] of sulphur the price had [illegible] The Fertiliser Corporation [illegible] ice of Rs. 650 per tonne

12 2 3. In a number of cases it is said, material of the desired quality is not available or there are numerous other difficulties [illegible] e material even though [illegible] is a controlled com- [illegible] make allocations of the total country's production to the various States, but the State Governments have their own regulations regarding ingress and egress and numerous formalities are involved in its movement from one State to another Much time is lost on the procedure to be followed for procuring the right quality of alcohol and the delays involved hamper production of alcoholic products A suggestion has been made that Government may allow more distilleries to be set up within the States in order that inter-State barriers and obstructions may be overcome or in the alternative the movement of alcohol between States should be made easier

12 2 4. It has been stated by the Indian Chemical Manufacturers' Association that in the case of the following items the quantity available in the country is inadequate

*Citrates.*—A number of citrates such as ferric ammonium citrate, sodium citrate, and potassium citrate are used in the pharmaceutical industry and the shortage of these chemicals is being experienced in the country owing to lack of production of citric acid It has been suggested that indigenous production of citric acid should be given top priority and in the meanwhile import of citric acid should be liberalised

*Glycerine.*—Supplies of glycerine have become extremely difficult and since the pharmaceutical industry requires large quantities of this chemical it has been suggested that production of glycerine should be stepped up and the quantity needed should be made available to the industry.

*Corn starch.*—The price has gone up from Rs. 52 to Rs. 88 per 50 kilos.

*Pyridoxine hydrochloride.*—The landed cost of the imported material is Rs. 268 per kilo as against Rs. 800 per kilo of the indigenously manufactured material.

*Sodium hydroxide pellets.*—The cost of the imported material is Rs. 5.35 per kilo as against Rs. 8.50 per kilo for the indigenous material.

*Streptomycin sulphate.*—No import of this material is permitted since the Hindustan Antibiotics is the sole distributor. The prices have gone up from Rs. 160 to Rs. 295 per kilogram and the supply is also inadequate since the unit does not produce as much as is needed by the defferent fourmulators of this drug.

*Dihydrostreptomycin sulphate.*—The product is not manufactured in the country but imports have been stopped. It is therefore not available.

*Sulphadiazine.*—Only one company is manufacturing this important drug and this unit is also dependent on the import of intermediates. Supplies are extremely irregular and inadequate. The desirability of liberalising imports of this drug has been advocated.

*Cocoa powder.*—The availability of this material depends upon the import of cocoa beans which are allowed to be imported by actual users and confectionary manufacturers. Users of cocoa powder have difficulties in getting import licences and have therefore to depend for their supplies on confectioners. But as the latter need the entire imports for their own production, they are hardly able to spare any supplies for other industries. It has been suggested that pharmaceutical industries should be allowed to import the product directly at reasonable prices.

12.2.5. It has been stated that in the case of following material the prices have gone up to a very considerable extent, particularly after devaluation.

| Material | Unit | Pre-devaluation rate per unit (landed) Rs | Post-devaluation rate per unit (landed) Rs | Increase (%) |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| *Imported* | | | | |
| Sulfadimidine | Kg | 22 10 | 34 80 | 57% |
| Sulfamerazine | Kg | 40 90 | 58 60 | 44% |
| Sulfadiazine | Kg | 33 80 | 48 00 | 42% |
| Mycostatin | BU | 371 00 | 540 00 | 46% |
| Triamcinolone | Kg | 71,600 00 | 99,335 00 | 39% |
| *Indigenous* | | | | |
| Streptomycin | Kg | 225 00 | 295 00 | 31% |
| Procaine Hcl | Kg | 33 00 | 47 30 | 44% |
| Gelatin Capsule | 1000 | 25 50 | 27 50 | 8% |
| Sugar | Kg | 1 42 | 1 50 | 6% |
| Aspirin | Kg | 9 70 | 12 30 | 27% |
| 20 mm Aluminium seals | 1000 | 7 45 | 8 25 | 10% |
| Aluminium foils | Kg | 26 08 | 28 32 | 9% |
| Rubber stoppers | 1000 | 23 60 | 24 93 | 5% |
| Buff Board | Gross | 69 98 | 76 84 | 10% |

12 2 6 Individual units have made a number of complaints in addition to stating generally that there is uncertainty owing to periodic changes in import policy The issue of licences for quantities based on the past consumption makes it difficult to have adequate supplies of raw materials with the result that the requirements have to be supplemented from the local market, on payment of high prices. There has been a steady rise in prices especially after the Indo-Pakistan conflict and rupee-devaluation. The other problems mentioned by the industry are as follows :

Acetic anhydride technical is not available according to the requisite specifications. The material available has been assayed at only 60 per cent.

Difficulties are experienced in procuring the supplies of raw material like P-acetaminophenol and methyldichloroacetate from indigenous sources.

Prices of dibasic ammonium phosphate are high. The post devaluation landed cost is Rs. 3.09 per kg. whereas the price of the indigenously manufactured cost of the chemical is between Rs. 6.50 and Rs. 8.50 per kg. This intermediate is manufactured from phosphoric acid and its inadequate availability is the cause of high prices of the product. Zinc sulphate and zinc chloride are both manufactured from imported intermediates and adequate supplies are not regularly available.

*Oil white technical.*—Burmah-Shell used to supply small quantities of oil white technical from Assam but owing to discontinuance of supply the requirements are now met from imports. The landed cost is Rs. 6.40 as compared to Rs. 17.00 per gallon from the local market. The quality of the purchased material also does not conform to the specifications.

For the manufacture of insulin pancreas gland is needed and there is a worldwide shortage. The landed cost has increased from Rs. 5,710 per tonne in 1964-65 to Rs. 8,400 per tonne after devaluation. The imported cost of the Australian pancreas is somewhat lower at Rs. 7,350 per tonne but owing to lower yield it is less economical than the American product. Besides shortage there is also the problem of transport since it has to be transported in frozen containers and the overseas suppliers supply it either in five tonne or ten tonne lots subject to the availability of freezer compartments in cargo ships. Supplies are, therefore, made every four or six weeks. Owing to the poor quality of the Indian pancreas and lack of facilities at slaughter houses in the country no indigenous supply of this product is likely to be available in the near future.

Supplies of pure salt which is needed for the manufacture of insulin are also said to be irregular and this dislocates production.

One of the units Boehringer-Knoll has stated that owing to inadequate supply of hydrogen the company had to establish its own plant at a cost of Rs. 3 lakhs.

*Nitric acid.*—Weak nitric acid is available from the Fertiliser Corporation of India at Trombay which is taken to the High Explosives Factory at Poona for concentration. The only source

of supply, therefore, is the High Explosives Factory at Kirkee But in times of emergency priority is given to defence requirements which results in stoppage and irregular supply

Some difficulties have been experienced also with regard to toluene Prices of dextrose have gone up from Rs 1,980 per tonne in 1963 to Rs 2,675 in 1967 and the cost of manufacture of Streptomycin Sulphate has therefore gone up

*Ammonium sulphate*—Release orders for this material from the Government of India have to pass through the D G T D and the Food Ministry and this takes time resulting in dislocation of schedules.

*Calcium carbonate*—Material of satisfactory quality is not available from indigenous sources and whatever can be supplied is inferior as compared to the imported one Owing to this handicap the yield of Tetracycline goes down by 20 per cent and it has been suggested that either the quality of the indigenous calcium carbonate should be improved or licences for imports should be granted

*Cotton seed flour*—Even though cotton seed is available in the country in abundance, no indigenous production of flour has yet been established Synbiotics conducted experiments [illegible]

The only manufacturer of Prednisolone, Wyeth Laboratories has complained of difficulties in the procurement of dioscorea root, the basic starting material, as also in securing the adequate and right quantity of solvents, particularly toluene In the case of toluene owing to minor legal technicalities the Central Excise has refused to allow draw back on the local purchases with the result that the price paid was out of all proportion to the landed cost of the imported material Dioscorea is collected from the Northwest Himalayas with the permission of the respective State Governments Owing to the demand for this root there has been a tendency to raise the prices by those who are connected with root collection In addition to this the root is being exported which further reduces the supply and tends to raise the price The unit has represented that instead of exporting the root it would be more desirable to allow to it to be processed here and to export diosgenin which is a higher intermediate for earning more foreign exchange

12.2.7. In the case of raw materials needed for the manufacture of formulations the following problems have been brought to our notice.

Owing to lack of proper refrigeration facilities at slaughter houses the quality of raw liver is not uniform and does not conform to the specifications relating to vitamin content, anti-histamine content and colour and it has been suggested that Government should ensure refrigeration facilities at slaughter houses.

Yeast produced in the country does not appear to conform to the specifications which are requisite for the pharmaceutical industry. But import licences for yeast have not been granted by the Government and it has therefore been suggested that either yeast of the right quality should be made available within the country or imports of yeast should be liberalised.

*Gelatine capsules.*—There is at present only one manufacturer in the country who can manufacture capsules on automatic machines. It has been stated that not only are the supplies limited in quantity in view of the technical difficulties encountered by the manufacturer, it is very difficult to obtain capsules of a satisfactory quality. The size and texture is not uniform which results in the frequent arrest of the machines. In this case again it was urged that the imports of empty gelatine capsules of the right quality should be allowed or capsules of the right quality may be manufactured in the country and made available to the manufacturers of pharmaceuticals.

At the public inquiry it was pointed out that in the vials produced indigenously black particles were found, that rubber stoppers were of poor quality as a result of which the quality of the drug deteriorated, that the S.T.C. was previously charging Rs. 180 per tonne for Sulphur, but the rate had now gone upto Rs. 450, that the price of hydride had gone up by 50 per cent in the last eight months and in the case of potassium ferro cyanide the price had gone up from Rs. 900 to Rs. 2,100 per tonne. It was also suggested that Indian Standards Institution should lay down standards for glass tubings and stoppers and that another glass tubing unit may be licensed.

*Rubber stoppers.*—A number of complaints have been made with regard to rubber stoppers by Hindustan Antibiotics. These are as given below :

The sizes are not always uniform with the result that there are frequent interruptions in vialling operations. In one case it was found that there was a tenacious film of dust on the rubber stopper

and this was traced to the poor quality of water being used in the rubber stopper manufacturing operations In the case of pink rubber stoppers it was found that the colour reached out causing production handicaps This was due to certain fugitive indigenous dyes being used in the manufacture It has not yet been possible to solve this problem and these stoppers have to be treated before these can be used The limit of reducing agents in rubber stoppers is one milligram but it was found that it was always exceeded However it was possible to solve this problem to a certain extent by maturing the stoppers and bringing it down to the maximum permissible level

*Vials* —There is lack of uniformity in the sizes of vials in spite of size specifications being available to manufacturers Sometimes glass vials were found to contain black particles which could not be easily washed out

*Aluminium seals* —Some of these were found to be of poor quality or tarnished and in the case of local trips the metal was too tenacious and the central portion could not be dislodged with the requisite pressure In addition to poor quality shortages were also experienced by formulators

The prices of locally produced Insul ne crystalline are re ported to be much higher than that of the imported variety

12 2 8 The evidence so far discussed on this issue le ds to the following conclusions

The imported raw materials and intermediates are not only satisfactory in quality and strength but their prices are also low The only handicap in this respect with which the industry is faced is that there is not enough imported material to go round There is no complaint of poor quality, lack of conformity with specifications high prices, irregular or uncertain supply in respect of the imported raw materials and intermediates On the other hand the indigenous material appears to suffer not only from defects of quality but is also beset with many other problems The indigenous raw material has invariably in a number of cases been regarded as of poor qualit [illegible] and bearing very high prices [illegible] irregular and uncertain In th[illegible] are indigenously produced, bottlenecks of a procedural nature have been encountered with regard to the system of allotment, licensing and inter-State traffic It is a matter of great regret that our slaughter houses do not make the supply of even an ounce

of the pancreatic gland and we have to depend for it entirely on imports. The supply of liver from slaughter houses is also very unsatisfactory. A stage has now been reached when slaughter houses have to be used not only for providing meat as an item of food but also as sources of some of the important medicinal and biological raw materials and the State must take in hand the regulation of large slaughter houses in such a way that the by-products are not wasted but can be retrieved and utilised for medicinal and therapeutic purposes. Notwithstanding the heavy installation of units manufacturing glassware in the country containers of the requisite quality which do not call for very high standards are not easily available. The same holds good for rubber stoppers as well as aluminium strips. Gelatine is imported and all that is done here is to convert it into capsules but owing to lack of uniformity of size specification, it cannot be used satisfactorily for filling of capsules on automatic machines. All these matters need the close attention not only to the industry but also of Government and its various agencies which control and regulate production and quality in order to ensure that the indigenous industry is not found wanting even in those spheres where self-sufficiency is claimed but has not been achieved owing to lack of quality and conformity to specifications. Attention needs also to be paid very closely the arrangements for raw materials and intermediates not produced by making their supply certain. Schedules need to be drawn up for this purpose in order to ensure that with a certain degree of vigilance of programme planning uncertainties are eliminated. We understand that in many advanced countries of Europe and particularly in Denmark no drugs in the form of capsules are marketed and that the drugs are sold in the form of tablets. It would be desirable to emulate this example and save foreign exchange by the elimination of the use of imported Gelatine.

## CHAPTER 13

## GENERIC VERSUS BRAND NAMES

13 1 The chemical name of a drug indicates its structural makeup and it can be expressed in a variety of forms This chemical name is however not employed when naming a pharmaceutical product and instead a nomenclature known as generic is developed and used This generic name is meant to indentify the drug for the purpose of Pharmacopoeias, Formularies and academic references When the drug is manufactured by a particular company which may or may not have a patent for it is usually called by a proprietary name which is also known as the brand name As distinct from the products of other industries therefore in the case of drugs there are three tiers of nomenclature used As soon as invented [illegible] The generic

[illegible] which was res-

[illegible] ter of America

[illegible] le in the last

*few decades the generic name is referred to the Council of Drugs* of the American Medical Association by the inventor and the Council transmits it to several agencies including the United States Pharmacopoeia and the World Health Organisation for approval If no contrary views are expressed within three weeks the name becomes final From then onward the particular name is used for the drug in publications in scientific literature on medical, Pharmacological and chemical subject It has been contended sometimes that the inventor deliberately select a complicated name which cannot be easily pronounced so that there may be greater room later on to apply the brand name which would be the property of the particular manufacturer The same practice prevails in other countries too and if drugs were to be invested in India the generic name would initially be suggested by the inventor and the same would need to be considered by the Drugs Controller' At present no rules with regard to providing of generic name to drugs exist It is necessary here to draw a distinction between patents on the one hand and generic name and the brand name on the other Every basic drug irrespective of the fact, whether or not it is governed by a patent has a generic name The same however does not apply to brand names The brand name is mainly likely to be a registered trade mark and invariably applied to formulations Where the process of manufacture

is also subject to patent it is not open to others to manufacture the particular drug as long as the patent lasts.

13.2. The brand name is usually the property of the particular manufacturer who employs it ; it is used both or basic drugs as well as its formulations. Since the use of the drug by the patient is in the form of formulations, the consideration of brand name is more relevant in so far as formulations are concerned. Broadly speaking, the brand name being the propeity of the manufacturer it entitles him to charge a distinctive price irrespective of the price of the same drug or formulation as may have been fixed by other manufacturers and formulators. Therefore the industry advocates the necessity for the continuance of brand names and has advanced a number of reasons for perpetuating this distinction. Some of the arguments cited in favour of the perpetuation of the brand name are as follows :

1. *Salts.*—Several salts of the active ingredient are often available and are used and it makes a real and definite difference to the patients which particular salt of a drug he receives. The inherent factors involved are irritancy, patient tolerance and absorption. For salts can differ in percentage content, solubility, dissociation and the less soluble salts which are often used with stabilishers can be toxic.

2. *Vehicle.*—The choice of the vehicle in which the active ingredient is contained varies with different manufacturers. These substances have a bearing on the stability, shelf-life, the rate of release of drugs, absorption and degree of penetration. The right type of vehicle is of special importance in topical preparations for the eye, ear and skin etc. or for parenteral solutions. A wrong vehicle can therefore cause variations in compatibility, irritability, allergenicity, etc. and can change a useful drug into a dangerous one. It has been stated that the same active ingredients in two different vehicles gives a completely dissimilar resultant effect.

3. To achieve similarity of therapeutic effect the hydrogen ion concentration and the amount and type of buffering should be indentical for products of the same chemical composition. In the absence of such correspondences, though generically equivalent, the different drugs may be pharmacologically and clinically dissimilar.

4. *Purity and sterility.*—Insufficient purification may lower efficacy and stability and traces of intermediates or associated

materials can give rise to toxic effects Sterility and freedom from Pyrogens is essential

5 *Particle size*—The finer the particle the quicker and more complete is the absorption The importance of this had led to micronisation of many preparations

6 *Stability*—Failure to ensure that the chemical compound retains its potency over a period of times may make the drug ineffective On the other hand, any concentration higher than required with a view to conserve potency may result in overdosage

7. *Compatibility*—To mark bitter taste or for ensuring bitter absorption, or a smoother manufacturing process the basic chemical has often to be mixed with many additional substances and it needs to be ensured that these additions are compatible and do not remove the therapeutic effect of the drug or render it toxic

8 *Sustained release medication*—Too fast a release may mean quick absorption and equivalent elimination , on the other hand, slow release would result in delay in the onset of effect and in poor response

9 *Disintegration*—Disintegration time of tablet or capsule is very important in order to ensure the right amount of absorption at the right location in the alimentary system

10 *Solubility*—There is danger of less soluble drugs being kept in solution by addition of substances which may sometimes be toxic

11 *Availability of the active ingredient in the drug*—To ensure substained availability of the requisite quantity of the active ingredient overages have to be provided. Since these differ in proportion from drug to drug experimental studies have to be conducted and meticulous calculation and measurement are necessary

12 *Viscosity*—The correct viscosity has to be maintained in the case of liquid formulations

13 *Ease of application and removal*—The base of lotions, creams and ointments has to be selected with great care and extreme conditions of climate have to be kept in view.

14. *Melting point.*—The melting point of drugs or applications has to be related to the body temperature but it has simultaneously to be ensured that its preparation does not disintegrate or melt under adverse storage conditions.

15. *Flavour.*—Optimum palatability without affecting the thereapeutic value of the active ingredients has to be ensured and much research is needed for this.

16. *Determination of shelf life.*—Reputable manufacturers, it is said, carry out preservation tests while others do not with the result that the drug in storage loses its potency or builds up dangerous bacterial contamination.

17. *Containers.*—The appropriate containers can react with the active ingredient in the drug and lead to its chemical inactivation or degredation which may result in toxic substances being released. Differences in quality of glass, stoppers, filling gas, etc. can effect the efficacy of a drug.

18. *Stabilising agents.*—Preservatives, anti-bacterial stabilising and anti-oxidative agents are important because they can markedly alter the pharmacological effects of the principal ingredients. The fact that an equal quantity of active ingredients has been placed in two products does not mean that there will be equal availability of the active ingredients after a given time.

19. *Packaging.*—In the case of volatile agents, ineffective packaging can result in evaporation of the contents.

20. *Enteric coating.*—In a number of cases enteric coated tablets which physically appear identical to the brand prescribed and even contain and accurate amount of the desired drug do not dissolve at all but pass through the body unchanged.

21. *Allergic manifestations.*—Different manufacturers may use different supposedly inert ingredients necessary for the manufacture of a product, but the patient may be allergic to one and not to the other. It has been stated that the physician knowing the history of his patient alone would be in a position to select a suitable brand to avoid these possible complications.

22. *Toxicity.*—This is one of the several factors influencing the degree of irritation caused by solutions designed for parenteral use and those intended for use in the eyes and nose. It may also reduce ciliary motility, and thus limit the effectiveness of a nasal preparation.

23 *Calorie values* —In diabetic and obese individuals the calo contents of liquid preparations play an important part a have therefore to be carefully regulated

24 *Surface tension* —In a number of liquid preparatio intended for application to the mucous membrance, surf tension has marked effect both on the rate of absorption a on overall activity

13 3 It has been claimed that a particular name impo upon the manufacturer the responsibility for purity, potency a efficacy and that from the receipt of the raw material to t final processing as many as 250 tests are carried out with su techniques as ultraviolet and visible spectrophotometry, pote timetry, polargography, X-ray, crystallography and radioactivi The product has also to pass other tests relating to clarity, toxici stovility, histaminic reactions, PH, freedom from pyroge foreign material etc

13 4 The Indian Chemical Manufacturers' Organisati has observed that the guarantee of the right type of formulatio is conveyed by the manufacturers' brand name It has tri to refute the assumption that the cost of medicines could be grea reduced if physicians were compelled to prescribe drugs by the generic names or non proprietary names rather than by the bra names of manufacturers The organisation has asserted th the drugs under generic names are not identical with those und brand names having the same active ingredients that they not have identical therapeutic efficacy, that they are not avail in all dosage forms for all conditions and that their cost is not mu less than the cost of brand name producers It has gone on state that such misconceptions and fallacies exist owing to ign rance of manufacturing technique, chemical testing, quality co trol and distribution In its view the brand name is a symbol which the manufacturer identifies his product from that of other it imposes upon him the inescapable responsibility for the purit potency and efficacy of the drug In short it is the man facturers personal signature of integrity

13 5 The Organisation of Pharmaceutical Producers of Ind says that the official standards are only minimal standards fo purity, strength and in some cases, limits for other substance But the official standards do not take into consideration suc other factors as particle size, dissociation rate, stability etc ar have quite often found them to be inadequate and have to be mad more stringent Even these minimal and sometimes in-adequa

standards are barely adhered to, while brand products reflect the care and control used to ensure efficacy, safety and stability and patient acceptability of these products.

13.6. The Organisation apprehends that substitution is likely to take place if the brand name is not written and the pharmacist would tend to dispense any other product available under the same name even though the doctor may have meant the product of a particular manufacturer. It would therefore be unfair to the doctor and prejudical to the health of the patient that the drugs should be prescribed by generic names. It nevertheless admits that because of these considerations the cost of production of these drugs which are marketed by brand name is much higher than those which confirm only to the minimum standards prescribed in the Pharmacopoeia.

13.7. It has been argued also that detailed investigations are made into the onset of active absorption, duration of therapeutic action, effectiveness and peak effects and where possible the relationship of chemical response to blood levels. If these experiments were demanded of generic drug houses many would disappear, since they have neither the resources nor the facilities to carry out the required research. It has been suggested that all the generic houses should be required to submit proof of the performance of their drugs in human patients before they are permitted to market them. The outlay made on research has been cited as a ground for having brand names in order that part of the expenditure so incurred can be recovered.

13.8. Those in favour of generic names have serious doubts with regard to the validity of the arguments put forth in favour of the perpetuation of brand names to the exclusion of the generic name. For historical reasons drugs have come to be designated by a nomenclature of non-functional identification while other commodities do not have such attributes. Manufactured goods are usually known by their common name; distinctions with regard to quality, purity and other factors are identifiable by the association of the product with the name of the maker. There is no other field of human endeavour in which arguments might have been brought with such force to bear on the necessity of having yet another set of non-philological names for a commodity or where special sanctity may be claimed by attributing to the product virtues derived from a mere name.

13.9. The acceptance of the brand name it is said gives an opportunity to the manufacturer to attach to the product

hidden and undisclosed qualities which they do not possess. The determining factor is the degree of publicity and sales promotion that a successful organisation can employ The sale and administration of drugs becomes then a matter for advertisement rather than the therapeutic properties of the ingredients or the reputation of the house which prepared these It has been argued that by diverse and relentless methods of sales promotion the prescribing physician is assailed on all sides with the brand names to such a degree as to impair the memoric residue of the terminology in which he was grounded In his daily practice, he sees brand names on his writing pad even if it is pleasantly inscribed in faint water mark, on the calendar as his desk, on the wall and almost on all the nick knacks in his surgery These in course of time replace the names he had learnt In addition he has a ready supply of these products given to him free and supposed to be distributed gratis by him to his patients Even if these are not misused, they create a psychological obligation and further assist him to remember the manufacturers of these drugs Much effort is applied to the selection of catchy short names for brands so that these can be remembered more easily and conveniently Once this campaign has succeeded the manufacturer has at his command all the market that he needs and the drug sold under the generic name even if equally or more efficacious beats a hasty retreat and is altogether disowned by the physician However, where Government purchases are effected which constitute only a small proportion of the total sales the story is different

13 10 Drugs are supplied to Government hospitals against tenders issued under generic names at prices considerably lower than the selling prices in the market This has been cited as *testimony in favour of the argument that increase in prices is closely* linked with brand names In India certain manufacturers market the same products both in the generic as well as brand names and it has been found that drugs sold under generic names are cheaper than those sold under brand names

13 11 Many representatives of the medical profession in India as well as abroad have criticised the proliferation of names of pharmaceutical products and the confusion caused by the practice of prescribing by brand names

13 12 By and large hospitals and Government departments in other countries too make their purchases in terms of generic names The analysis of such standard drugs here and elsewhere does not reveal any preponderance of drugs sold under generic

names as against those sold under brand names. In an investigation carried out in 1966, the United States Food and Drugs Administration sampled 4,600 drugs from 250 manufacturers. Of these 2,600 were sold by generic names and 2,000 by brand names. Of the generic named drugs 7.8 per cent were not of acceptable quality and of the brand named drugs the percentage was 8.8.

13.13. Indian Drug Manufacturers' Association contends that the therapeutic efficacy of equivalent drug should be the same when drugs are being produced according to laid out standards under an efficient Drugs Control organisation in the country. It has suggested that it would be helpful to the medical profession as well as to the consumer if Government draws up a list of essential drugs and allow them only to be marketed under generic names.

13.14. The Drugs Controller, Government of India, has in his memorandum pointed out that the formulations marked under proprietary or trade names are marketed at higher prices than these under the pharmacopoeial or generic names. In reply to our questionnaire hospitals of State Governments have also indicated their preference for formulations being sold under generic names. One of the reasons stated is that the different brands may be purchased on different occasions and this may cause confusion. The Committee on Essential Drugs of the Ministry of Health has also recommended that co-operation of the medical profession should be fully utilised for prescription of the drugs by generic names instead of through their brand names. It has also recommended that the generic name should be shown more prominently on the labels than the trade names by enacting legislation if necessary, and that medical colleges while imparting knowledge to students should strictly adhere to the generic names of the drugs. At the public inquiry the representative of the Indian Medical Association categorically stated that the Association would prefer to use generic names instead of brand names in drugs and that as far as medical instruction is concerned teaching is imparted through generic names. The Association also offered its cooperation in implementing any decision that may be taken in regard to the use of generic names.

13.15. Closely allied with the question of the utilisation of generic names is that of substitution, that is to what extent pharmacists are authorised to substitute a drug of the same generic name and allied properties when the prescribed drug is not available

In the United States of America it is legally prohibited to make any substitution notwithstanding the fact that the drug is the same It is incumbent on the part of the pharmacist that he dispenses the same drug which has been prescribed

13 16 On January 16, 1968 a notification has been issued by the Ministry of Health, Family Planning and Urban Development seeking to publish the draft amendment to the Drugs and Cosmetics Rules that any drug supplied on demand or against a prescription shall comply with the description of the drug as

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lied The effect of this rule is that if the prescription is a by a brand name, the pharmacist cannot substitute it by another drug of the same property even if the prescription is by generic name provided that the name of the manufacturer is given He has no choice but to dispense the drug made by the named manufacturer This approach is inconsistent with the declared policy of the Government to purchase and dispense drugs by generic names, and the views expressed by the many representatives on behalf of Govern-

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13 17 Having set forth the arguments for both sides, it would be worth considering the extent to which these are valid

13 18 The manufacturing requirements and tests of therapeutic efficacy can be classified into the following categories

(1) Requirements prescribed under pharmacopoeial standards for which no secret knowledge is needed and assay is possible ,

(2) Standards which are not prescribed but which are capable of being complied with varying degrees of efficiency,

(a) the results of which are significant

(b) the results of which are not significant

(3) Tests and standards not prescribed under the Pharmacopoeia but requires under the Drugs and Cosmetics Act and Rules

(4) Attributes not prescribed and which are also not assayable according to the existing recognised standards of assay

(5) Attributes of doubtful validity in the state of development of the pharmaceutical science today.

These may be taken up seriatum :

1. Requirements laid down under pharmacopoeial standards for which assay also is prescribed :

Selections of salts of active ingredients, pH rate, purity and stability relate primarily to the manufacture of drugs and standards for these are prescribed in the Pharmacopoeia. The vehicle wherever it is significant, particle size, if it is critical stability rate of disintegration, solubility, availability of the requisite potency, viscosity, melting point, enteric coating and density are also prescribed in pharmacopoeial standards and anyone manufacturing formulations in which these factors are of importance would have to adhere to these. It cannot therefore be argued, that in so far as these items, *viz.*, those mentioned at Nos. 1, 2, 3, 4, 5, 6, 9,10, 11, 12, 14, 20 and 22 above are concerned, these are attributes of brand names or are peculiar to the particular manufacturers. In order to be of the appropriate standard a drug or formulation will have to adhere to the standard prescribed in respect of these, irrespective of the fact whether it is marketed under a generic or a brand name. It is also necessary that the drug of the requisite potency must be available at the time when it is being administered and if this requirement is not available the drug is likely to be branded as sub-standard.

2. (a) Tests or standards which are not prescribed, but which are capable of being assayed and which are significant : Compatibility and sustained release medication are tests which are not prescribed but can be assayed. It is in respect of these matters only that a degree of refinement is possible. One manufacturer may claim greater compatibility and sustained release medication than another, but it was not possible to ascertain the name of any formulation either within the scope of our enquiry or outside in which claims with regard to better compatibility than those of others or a particular rate of sustained release medication may have been demonstratably made. It can therefore only be assumed that such standards are more theoretical than real.

2. (b) Tests or standards which are not prescribed and which are capable of being assayed but are not significant ;

We have been informed that claims with regard to particle size, ease of a application and removal, flavour and surface tension generally are matters which are not of any particular significance

in so far as the therapeutic efficacy of the drug is concerned Wherever particle size is significant, it is already prescribed If the particle size is not prescribed it has to be assumed that any variation is of little therapeutic significance

3 Tests and Standards not prescribed under the Pharmacopoeia but required under the Drugs and Cosmetics Act and Rules We have been informed that life period in respect of certain drugs which lose their potency on keeping have been laid down under Schedule P of the Drug Rules The use of proper containers as well as packaging in order to ensure that the content may not evaporate or may otherwise not deteriorate are also requirement for the purpose of ascertaining whether or not the drug is of standard quality If these requirements are not complied with the drug would become sub standard No merit can therefore be claimed for brand names in so far as these properties are concerned

4 Attributes which are not prescribed and which are also not assayable

Much has been made of biological availability of potent ingredients and allergic manifestations but these are matters of surmise and no standards have yet been evolved for these, nor is it possible to lay down at present any precise methods of determining these The argument that certain drugs for unknown reasons are less allergic than others is not based on any scientific data and it is not possible to determine the extent to which classification of such drugs for different individuals can be made No formulator has ever given the assurance that a particular drug manufactured by him is indicated in certain given conditions or any other drug manufactured by another house is contra indicated, even though the chemical structure prescribed may be the same

5 Attributes of doubtful validity

It has been said that the calorific value of the contents of the given preparation needs to be carefully examined The critical limits for these are prescribed and it is every unlikely that the tiny quantity of sugar administered along with syrups or used to coat pills may have deleterious effect on an obese or diabetic individual

13 19 There appears also to be a certain degree of confusion on two issues, namely (1) It is feared that the elimination of brand names would also mean the obliteration of the name of

the maker and (2) that brand names have something to do with patents. The confusion in respect of these two points needs to be cleared. Almost all the effective standards and tests of quality which have been mentioned by the manufacturers are prescribed by the pharmacopoeia or are required under the rules; in order to be effective and to be of standard quality the formulations should comply with these. If a greater degree of refinement is achieved than is prescribed it is not significant for the treatment of the disease, though it may be of some importance from the point of view of taste or aesthetics. However, if it is feared that the elimination of brand names would open the flood gates of spurious and sub-standard drugs the manufacturers may be reassured that they can still rely on the reputation of their name which would undoubtedly continue to be associated with the products. The guarantee prescribed to the doctor as well as to the patentee in that case would be the reputation of the house, which put it forth as is so eminently the case in respect of all other industries, whether in the form of consumer or producer goods. Much has been made of the necessity for higher price in order to meet the higher costs of ensuring that the drug complied with the standards mentioned. Once it has been demonstrated that these standards are those which are already required, it cannot be argued that it is necessary to spend more than others who are also required to achieve them, merely because of the fact that the former has a brand name and the latter does not have one.

13.20. Formulations in respect of which these virtues have been advocated are usually registered under trade Marks and are not under patents, since basic drugs alone can be the subject of patents. Basic drugs are not sold by brand names but by generic names and even if any one were to market them under brand names it would provide no particular advantage. Such of the basic drugs as are under patent derive the advantages of patent and the inventor is guaranteed elimination of competition so that his returns which may pay for the amount spent on research and development of the drug may be assured. The cost of research cannot therefore be confused with the perpetuation of brand names. If the patents were disallowed and brand names were allowed to continue the manufacture of basic drugs would not afford any particular advantage to the investors. Any expenditure therefore on discoveries of new drugs has therefore to be met from the facilities available through patent laws, or admissible expenditure incurred on research programmes.

13.21. Quality control can certainly be advocated as an issue of importance. But here again quality control is not the function

of the brand name but that of the organisation in which the drug is being produced It is also a historical fact that drugs are the only products in respect of which the State has usually taken the responsibility for maintaining quality and standards whether manufactured under generic or brand names and these have to be observed in conformity with certain standards prescribed by the Pharmacopoeia or those laid down in the Drugs and Cosmetics Act A drug whether sold under the generic or the brand name would be deemed to be sub standard or adulterated if there is any departure from the standards so laid down The function of the Pharmacopoeia Committee is to make these conditions as specific and definite as possible Successive revisions of these standards are made with the extension of experience and knowledge If some one claims that there is a purer drug available than the one prescribed by the Pharmacopoeia it does logically follow that it is likely to be more efficacious Purification beyond there tolerances permitted by the Standards does not enhance efficacy and its absence would not cause any side effects Yet if further refinements of these standards in order to eliminate the possibility of any injurious effects are necessary these would doubtless be undertaken To suggest that the Pharmacopoeial standards are not high enough and that by the adoption of brand names these standard are immediately raised would not be correct Even if it is assumed that the Pharmacopoeial standards require to be further refined, the proper course would be to improve and lay down standards in the National Pharmacopoeia to improve the therapeutic efficacy of a drug rather than depend on the brand name Again if any manufacturer advocating the perpetuation of brand names were asked if he could certify that his product was purer than the standards laid down in the Pharmacopoeia and that these purities led to greater therapeutic efficacy, it is doubtful if any affirmative response would be available It is therefore the manufacturer's name and not the brand name which is the ultimate guarantee of the confidence that the prescribing physician or the patient can place in the drug to be used

13 22 The ever increasing number of proprietary preparations and the variety of brand names under which indentical preparations are marketed has created a veritable babel in the pharmaceutical field and drugs have come to be known more by proprietary names than by their scientific or pharmacopoeial names Moreover, brand names tend to inhibit price competition but encourage product competition and extensive sales promotion which leads to increase in prices With a view to providing the physician with the compendium of essential formulations

that would meet the day-to-day need of the patients the Ministry of Health have published a "National Formulary of India". This Formulary is intended to serve as a guide in prescribing drugs.

13.23. It is suggested by the Federation of the Small Industries of India that the National laboratories should be directed to take part in trying for "new drugs" and their guidance should be made freely available to the prospective manufacturers including the small scale producers.

13.24. Medical colleges have been requested to keep the National Formulary as a guide for teaching. The State Governments and other major consumers of drugs in the country have also been requested to indent for their requirements in terms of preparations covered by the National Formulary. The Ministry of Finance have also exempted drugs included in the National Formulary of India from the Central Excise duty provided the drugs are marketed under the name included in the National Formulary accompanied by the words N.F.I.

13.25. While there can be no ground to advocate the perpetuation of brand names as the basis for prescription of drugs, it may however be said that generic names by themselves without the name of the manufacturer would not be adequate guarantee of the fact that the patient is being dispensed with the drug which the doctor had in view, The existing legislation in our country recognises both the generic names as well as the brand names, but it is incumbent on the manufacturer to enter the generic name also prominently on the container. It is true that some of the existing generic names are complicated. The extent to which complication is deliberate need not be gone into. A method can however be found to ensure that these names are abbreviated so that these can be pronounced and remembered with the same ease as the brand names. In fact it would be much easier for doctors as well as pharmacists to use them. It would be desirable to revise generic names and introduce an abbreviated nomenclature for the purpose of drug manufacture with short, distinctive and easily spelt out names.

13.26. In the case of formulations which are straightforward preparations such as tablets and capsules of a particular drug, it is quite possible to give a generic name. But the difficulty arises in the case of preparations which are prescribed in the form of combinations of two or three ingredients. Such combinations

are not usually included in the Pharmacopoeia or the National Formulary We therefore recommend that wherever such combinations are sought to be marketed by the manufacturers

tions over the straightforward preparations included in the Pharmacopoeia When such clinical data is presented the manufacturer should also suggest a generic name for it which if acceptable would form a generic name for that product and if not acceptable it may be open to the controlling authority to suggest an alternative generic name

# CHAPTER 14

# PATENTS LAW

## 14.1. Purpose of patents :

Patents are statutory grants which, in return for the disclosures of an invention, confer on the inventor for a limited time the exclusive privileges of working an invention and selling the invented product. The theory on which the patent system is based is that the opportunity of acquiring exclusive rights in an invention provides an incentive to research and technological progress. Further, it induces the inventor to disclose his discoveries instead of keeping them as a trade secret and offers a reward for the expenses incurred in developing inventions at certain stage at which they are commercially practicable. Lastly, it provides an inducement to invest capital in new lines of proudction. The patents are not created in the interests of the inventor but in the interest of the national economy.

14.2. The first legislation for the protection of inventions in India was made in 1856 designated as Act VI of 1856. A fresh legislation for the purpose of granting exclusive privileges in India to inventors was enacted in 1859. These two Acts afforded protection for inventions only. There was no law for protection of designs. To overcome this defect, the Patterns and Designs Protection Act, 1872 was passed. To amend some provisions which caused hardships, a fresh legislation was undertaken in 1911, in the form of the Patents and Designs Act, 1911, which is still in force. An important feature of this Act was that the duration of Indian Patents was made independent of the duration of foreign patents. The period was 14 years but was modified to 16 years in 1930. A special section (23 CC) was introduced in 1954 in the Patent Act giving special powers to the Controller of Patents and Designs to settle terms of licence so as to secure that food, medicines, insecticides, germicides, fungicides and surgical curative device shall be available to the public at the lowest prices consistent with the patentees deriving a reasonable advantage from their patent rights.

14.3. After the end of the Second World War, due to considerable economic and political changes the need for a comprehensive law so as to ensure that patent rights are not worked to the detriment of the consumer or to the prejudice of the trade or industrial development of the country was felt as early as in

1948 and in that year Government appointed the Patents Enquiry Committee to review the working of the patents law in India The Committee submitted an interim report in 1949 and the final report in 1950 But it was only in December 1953 that the Patents Bill, based largely on the U K Patents Act, 1949 and incorporating some of the recommendations of the Patents Enquiry Committee, was introduced in the Lok Sabha The Bill however lapsed with the dissolution of the first Lok Sabha Instead of bringing the lapsed Bill again before the second Lok Sabha Government *appointed in 1957 Mr Justice Rajagopal Ayyangar to* examine afresh and review the patents law in India and advise Government on the changes deemed necessary He submitted a comprehensive report in September, 1959 and his recommendations with regard to drugs were as given below —

"The history of the law in the United Kingdom shows that the degree of patentability of the inventions relating to articles of food and medicine has generally been more restrictive than in regard to patents for chemical inventions in general and never more extensive The reasons for this state of law are stated to be that the denial of product claims is necessary in order that such important articles of daily use medicines or food which are vital to the health of the community should be made available to every one at reasonable prices and that no monopoly should be granted in respect of such articles It is considered that the refusal of product patents would enlarge the area of the competition and thus result in the production of these articles in sufficient quantity and at the lowest possible cost to the public

To render even the process unpatentable is I consider not in public interest as the grant of exclusive rights to the process which an inventor has devised would accelerate research in developing other processes by offering an economic inducement to the discovery of alternative processes leading again to a larger volume of manufacture at competitive prices

The example of the rest of the world is of undoubted value and not to be disregarded without substantial reasons especially as under the patent laws of these countries whether they are industrially highly developed or still underdeveloped, whether their economy be capitalist or socialist claims for processes for inventions relating to articles of food or medicines have always been held patentable The continuance of this system during the long periods of time and varied conditions could only be explained by its being helpful in furthering the countries economic and other progress The only exceptions are—Italy which changed its law in 1957 by which even process claims for

medicines were not allowed though articles of food were outside this bar—and Denmark which, while permitting the process claims for medicaments denied the same for articles of food. We have little knowledge of the factors which led to the change of the Law in Italy, and possibly it is too early to evaluate its effects on that country's progress in the pharmaceutical industry. I would therefore, recommend that no patents should be granted for claims for articles of food and medicine as such but that processes for producing them should be patentable.

I consider that to maximise the benefit, inventions relating to articles of food and medicine—and in the last category I would include insecticides, fungicides etc.—should not be patentable as such but as in the case of substances produced by chemical processes claims for the processes for their production should also be patentable if they satisfy the other tests for patentability."

14.4. The Patents Bill, 1965, based mainly on the recommendations contained in the Ayyangar Committee Report (1959) and incorporating a few more changes in the light of further examinations made with particular reference to patents for food, drugs and medicines, was introduced in the Lok Sabha on 21st September, 1965. This Bill was referred on 25th November, 1965 to a Joint Committee of Parliament. The Joint Committee adopted a number of amendments and reported back to the Lok Sabha on 1st November, 1966. The report, however, was not unanimous and contained notes of dissent of some of the M.Ps. who considered that, with the amendments proposed in the majority report, the purpose of the Bill which was to stimulate inventions amongst citizens of India and to encourage development and exploitation of new inventions for industrial progress and the flow of technology from abroad into India was not likely to be achieved. The Patents Bill, as revised by the Joint Committee, was moved in the third Lok Sabha on 5th December, 1966 but could not be proceeded with for want of time and eventually, with the dissolution of the Lok Sabha on 3rd March, 1967, shared the fate of the Bill introduced in 1953. A new Patents Bill was introduced in Parliament on 12th August 1967 to amend and consolidate the law relating to patents. When enacted, it will replace the Indian Patents and Designs Act, 1911, in so far as it relates to Patents. The present Bill contains comprehensive provisions to amend and consolidate the existing law and also the amendments recommended by the Joint Committee of Parliament.

**14.5. The Patents Bill, 1967 :**

The field of activity most affected by this new Bill is the pharmaceutical industry and, to a certain extent, the chemical industry.

Medicine or drug has been defined to include (i) all medicines for internal or external use of human beings or animals, (ii) all substance intended to be used for or in the diagnosis treatment, mitigation or prevention of diseases in human beings or animals (iii) all subtances intended to be used for or in the maintenances of public health, or the prevention or control of any epidemic disease among human beings or animals and (iv) all chemical substances which are ordinarily used as intermediates in the preparation or manufacture of any of the medicines or substance referred to above but do not include insecticides germicide, fungicide or any other substance intended to be used for the protection or preservation of plants The salient features of the amendments proposed in so far as these attract the drugs industry are as follows —

*Clause* 5 —This clause provides that the patent shall be granted only in respect of claims for the method or process of manufacture and in respect of claims for the substances when produced by such methods or process

*Clause* 48 —This clause provides that the importation of medicine or drug or medical equipment by Government for its own use or the production of a patented article by Government for its own purpose shall not be regarded as an infringement of patent rights.

*Clause* 53 —This clause stipulates that for inventions claiming a process for the manufacture of food medicines and drug the term of a patent shall be 10 years and in respect of other clauses of inventions, the term shall be 14 years from the date of the patent

The existing Act provides that the term of all patents shall be 16 years which can be extended to a further period of 5 years and in exceptional cases even to 10 years if Government is satisfied that the patent has not been sufficiently remunerative

*Clause* 87 —According to this clause every patent granted after the commencement of the Act relating to food medicines or drugs as well as methods or processes for the manufacture or production of chemical substances including alloys, optical glass, semiconductors inter metall c compounds, shall be deemed to be endorsed with the words "Licences of right"

There is a discrimination between this clause and clause 86 which stipulates that in the case of patents other than those for food, medicines or drugs as well as methods or processes for the manufacture or production of chemical substances only after, the expiry of three years from the date of sealing or a patent, the Central Government can make an application to the Controller for endorsement of the patent with the words ' Licences of right"

*Clause* 88.—This clause lays down that where an endorsement "Licences of right" has been made, any person who is interested in working a patented invention shall be entitled to do so on application to the Controller. The Controller is required to grant a licence without taking into consideration the requirements to be fulfilled by the applicant for compulsory licence under clause 84. The clause also provides that the royalty and the other remuneration payable under a licence shall not exceed 4% of the net ex-factory sale price in bulk of the patented article, exclusive of taxes and commissions determined in the prescribed manner.

Under the present Act, royalty is to be determined by the Controller who is directed to secure that food and medicines shall be available to the public at the lowest price cosistent with the patentee's deriving reasonable advantage from the patent rights.

*Clause* 89.—Seeks to vest a residuary power in the Controller to revoke a patent in the event of the invention not being worked to an adequate extent in the country or not being available to the public at a reasonable price notwithstanding the compulsory licensing provision, etc. The clause also lays down the time limit for the disposal of applications for revocation of patents.

*Clause* 90.—Seeks to define what is meant by the expression "reasonable requirements of the public have not been satisfied" for the purposes of the preceding clauses in the context of an under developed country like India.

*Clause* 95.—Seeks to regulate the terms and conditions which may be imposed in respect of compulsory licences. Except where the Central Government has in the public interest otherwise directed, the import of a patented article cannot be permitted under the guise of a compulsory licence. Any authorisation permitting the licencee to import a patented article given by the Controller in pursuance of such direction by the Central Government shall be subject to such conditions as the Central Government may impose in regard to royalty and other remuneration payable to the patented and other matters.

*Clause* 102.—This clause enables Government to acquire an invention for a public purpose when considered necessary and also provides for payment of compensation.

14.6.1. The main provision of patent laws in other countries giving particulars of patentable subject matter, duration, treatment of foreign nations, requirement for working and cases in which patents are subject to public use are set out in Table 14.1:—

TABLE 14 1

*Main provisions of patent laws in other countries*

| Country | Patentable subject matter | Duration of patent | Treatment of foreign nationals | Requirements for working of patents sanction for non working | Cases in which patents are subject to public use |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| United States of America | Any new and useful process, machine manufacture composition of matter, or any new and useful improvements thereof Inventions must not be publicly known or used in the United States, or patented or described in a printed publication in the United States or elsewhere before the invention was made by the application, and regardless of the date of invention the invention must not be in public use or on sale or patented or described in a printed publication more than one year before the date of the application for patent in the United States<br><br>*Not patentable* —inventions contrary to public morals business methods and scientific principles or discoveries not applied to a useful purpose, atomic weapons | Seventeen years from date of grant No extension except by special act of congress | National treatment One year foreign filing priority under Paris Convention Pan American Convention of Buenos Aires and under any other reciprocal arrangement | No provisions in patent law Atomic Energy Act of 1954, contains a temporary provision, expiring in 1964 for the grant of compulsory licences under a patent when there has been a declaration after hearing that invention is of primary importance in atomic energy field and that licensing of the invention is of primary importance in effectuating the policy and purpose of the Atomic Energy Act | Where violation of the antitrust laws by means of patents is found the court may provide for the granting of licences on reasonable terms and in some cases the grant of royalty free licences |

TABLE 14.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| United Kingdom of Great Britain and Northern Ireland. | Any manner of new manufacture any new method or process of testing applicable to the improvement and control of manufacture.<br>*Not patentable.*—well established natural laws; ingenious ideas or discoveries with no industrial application inventions contrary to law or morality substances of food or medicine which are mixtures of known ingredients plant and animal varietie | Sixteen years from filing of complete specification, with provision for extension by five years, or in exceptional cases ten, on the grounds of inadequate remuneration. | National treatment. Foreign filing priority under Paris Convention. | At any time after the expiration of three years from the sealing of a patent any person interested may apply to the Comptroller General for a licence under the patent or for the endorsement of the patent 'licences of right; if the invention is not being worked commercially in the United Kingdom to the fullest reasonable extent, if demand for patented article is not being met on reasonable terms or is being met to a substantial extent by importation or if by reason of the patentee's licence conditions an export market for the patented article is not being supplied, or the working of some other patent hindered, or the manufacture, use or sale of materials not protected by the patent or the development of commercial or industrial' activities is unfairly prejudiced. The Comptroller shall consider nature of invention, time elapsed since grant, and efforts of patentee fully to work, ability of licensee to work invention to public advantage and risks to be undertaken by him. The Comptroller's powers | Any Govt. department and any person authorised by it may use any patented invention for the services of the Crown (including the production or use of atomic energy). Applications for patents relating to defence may be withheld from publications relating to atomic energy uses may similarly be withheld from publication until certified by the Crown as not being required for defence purposes. Provision is made for the payment of compensation by the Crown. The Comptroller-General must grant compulsory licences in respect of patents relating to foods, medicines or surgical or curative devices unless it appears to him that there are good reasons for refusal. An application for such a licence may be made any time after grant and appeal lies to a Judge of the High Court. |

| | | | | | |
|---|---|---|---|---|---|
| | | | | shall be exercised to *secure* maximum working of inventions suitable in [illegible] *to patentee* and protection for any person working an invention *under the protection* of a patent. Patent may be revoked after the expiration *of two years* from an order for a compulsory licence if such licence *or an endorsement* licences of right would not be effective for the *purposes* set out above. An appeal lies from any orders of the *Comptroller made* under the above provisions to a [illegible] High Court. *No order* may be made which is at variance with the Industrial *Property* Convention | |
| **Federal Republic of German (*West Germany*)** | Patents and patents of addition are granted for new *inventions* which permit industrial utilization. Utility models are registered with examination as to novelty.<br><br>*Not patentable* —*inventions* the utilization of which would be contrary to law or public *morals*; inventions of articles of food and taste medicines substances which are produced by chemical processes in so far as the inventions do *not concern* a specific process for the preparation thereof | Eighteen years from date of application. Utility model patents are granted for *three* years from the date of application and an extension *of* three more years may be granted upon application and payment of fees | National *treatment* Foreign filing priority under [illegible] *Convention*. Foreign applicants must be *represented* by a German lawyer or patent attorney | See column 6 | If working is of public interest *compulsory* licence and possibly revocation. Revocation *by Federal* Patent Court two years after grant of *compulsory* licence is possible if the invention is exclusively or mainly exploited outside Germany and if compulsory licence does not sufficiently meet the public interest. *Free use of the* invention by order of government in the *interest* of public welfare or security. Appeal to Federal Administrative Court possible |

TABLE 14.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| France . | Invention of new industrial products: invention of new methods, or new application of known methods, for obtaining an industrial result or product. Patents of addition are also granted.<br>*Not patentable.*—pharmaceuticals are not patentable under the Act of 5th July 1844, which allows only the processes or means of production to be protected, but they may be the subject of "special patents for medicaments" Financial schemes and combinations, and inventions, and inventions contrary to public order, morality or law, are likewise not patentable. | Twenty years from filing date. | National treatment. Foreign filing priority under Paris Convention and other reciprocal arrangements. | Any patent not effectively utilized for three years may be the subject of an application for compulsory licence. The conditions under which the licence is granted are fixed by the court. Working must not be discontinued for three successive years, in which case it may be subject to compulsory licence. | Special licences may be granted if pharmaceuticals which are protected by special patents for medicaments, or the production processes for which are patented under the 1844 Act, are supplied in insufficient quantities or at exorbitant prices or are deficient in quality. Licences may be granted for the benefit of the State in respect of patents effecting national defence, which are also liable to expropriation against compensation. |
| Italy . | Any new invention utilizable in industry.<br>*Not patentable.*—inventions contrary to law and public policy, pharmaceutical products and processes. | Fifteen years from date of application. | National treatment. Foreign filing priority under Paris Convention. | Revocation is provided for if the invention is not worked within three years following the patent grant, or if working the patent grant is discontinued for three years. In neither case, however, is the patent revoked if the failure to work was due to causes, other than lack of funds, beyond the control of the patentee. | Expropriation against compensation in the interests of national defence or for other reasons of public utility. |

| | | | | | |
|---|---|---|---|---|---|
| Japan | Any new invention capable of be ng used for indust al purposes is patentable Uti l ty models patents are granted for dev ces invol ing tecl n cal improvements<br><br>*Not pa entabl* —art cles of food and dr nk med c nes substances *manu a t ed by c em cal processes or* by a process of nuclear con vers on art cles n ur ous to publ c order good morals or publ c health | Fifteen years from date of pub ca on the term of the patent may be extended b t *in no case sl a term* to exceed twen y yea s from date of appl cat on *Ut ty* model patents are gra ted for ten years *from date of publ ca* t on of the appl ca t on *in the Ut l ty* Models Gazette or fifteen years f om the date of *fil ng* wh chever is shorter | Nat onal treatment and fore gn *fil ng* pr ority under *Paris* Convent on In other cases *nat onal* trea ment and fore ign fil ng p ior ty s *ava able only on* tl e bas s of rec pro c ty Foreigners must subm t a ce t f cate of nati nal ty to asce ta n and to approach a state re presentat ve res *dent in Japan* | If patented inve on has not been properly worked w th n Japan for tl ree consecut e years or more *any person may request a l cence to work tl e patent* s bject to appro al of tl e *D rector General* of the Patent Off ce Fa l ng agreement a pl cant *may* ask tl e D rector General to o der a licence | *The Min ster of Inter nat onal Trade and* Industry can order a l cence for *working in the publ c interest* |
| Switzerland | New invent ons nd strially ut l zable The nvent on *must solve a tecl n cal pro blem, be suscept* ble of n d str al appl cat on be new represent a techn cal ad vance and be based on a creat e idea<br><br>*N t patent ble* — n ent ons *contrary to law* *ent ons contrary to moral ty* cl e m cal sub tances (n t ap pl cable to *alloys*) *med* c nes foods an mal *food* stuffs beverages even when they are not cl em cal subs tances processes for the manufactu e of med c nes by *o l er* than chemical methods | Eigl teen years from date of *appl cat on* | Nat onal treatment A d n c led agent *in S v ze land* are quir d Forei n f *l ng pr or y under* the Par s Convent on | On request compulsory l cences may be granted by tl e co rt *f the in en t n* s not a l quately worked in Sw tzerland w tl n tl ree years f o n tl e late of re i trat n *of tl e patent Th patent* n ay be rev ked f af er tl e exp ry f two years *f o n the issue of tl e o i* g nal l cence the grant ng of l cences s not suff c en to sa sfy the nee ls of tl e Sw ss market Where the legislat on *of the fore* gn country of which the pa tentee is a nat onal or in wl ch he has an establi shment prov des for re *vocat on on gro nds* of *fa l r e to work after three* years f o t tl e late of ue of tl e patent re *voca on may be sougl t in* Sw ze lan l in l eu of a co pulsory l cence | Total or part al ex p opr at on *in tl e publ c in erest* aga inst compensat on to be fixed by the court if n cessary |

14.6.2. Though India is not a signatory to the International Union for the protection of industrial property, which was established by the Paris Convention in May 1883, it accords national treatment to foreigners also almost on the same terms as stipulated by the Paris Convention. The Paris Convention aims at securing uniform treatment of patent rights for the signatory country. It is an open agreement and any country may unilaterally accede to the Union. At present there are 64 countries which adhere to it. The main features of the convention are

(1) the principle of national treatment,

(2) priority of patent application and

(3) compulsory working and compulsory licensing.

Under the 'National Treatment Principle', member States confer the same rights on nationals of every member State as they give to their own nationals. The right of priority entitles the national of a member country who has filed a patent application in a country which is a member of the Paris Union, a twelve month priority over any other person for filing an application for the same invention in all other member countries of the Union. In the absence of priority the national law requirement of novelty could not be satisfied in the case of a subsequent application if earlier publication anywhere in the world bars patentability. Sanctions for non-working cannot be imposed unless four years have expired from the date of filing of the application or three years from the grant of the patent, whichever is later.

The British law of patents has its origin in the Act of 1942 under which chemicals and compounds already known cannot be patented if used for therapeutic purposes. British firms therefore pay more attention to the synthesis of chemical agents in order to secure patents. It is sometimes said that as a result of this tendency phytochemical research is neglected, since therapeutic discoveries in this field would not be covered by patent right.

Particulars of the percentage of patents by foreign countries held in some of the developing and developed countries of the world are as follows :

| | |
|---|---|
| Australia . . . . . . . . . . . . . | 63 |
| Belgium . . . . . . . . . . . . | 86 |
| Brazil . . . . . . . . . . . . | 94 |
| Canada . . . . . . . . . . . . | 81 |

| | |
|---|---|
| Denmark | 79 |
| West Germany | 37 |
| France | 59 |
| Ind a | 89 |
| Ireland | 97 |
| Israel | 69 |
| Italy | 63 |
| Japan | 34 |
| Netl e lands | 79 |
| Norway | 80 |
| South Af ica | 98 |
| Sweden | 67 |
| Switzerland | 65 |
| U A R | 93 |
| U K | 47 |
| U S A | 16 |
| Yugoslavia . . . . . . | 61 |

From this analysis it would be observed that there are only four countries, *viz*, U S A, Japan, West Germany and U K, where foreign nationals are in a minority in the percentage of patents held In the rest of the countries most of the patents are held by nationals of other countries India with 89 per cent is not thus an exception

14 7 *Views and comments*—Different views and comments have been expressed on the Bill by the Industry which are given below

*The case against patents*—There is a school of thought which advocates that although the patent system has been in existence in India it has failed to provide benefit to the industry and trade and the system has operated generally to the detriment of the country's economy Since more than 89% of the patents granted and an even larger number in the case of drugs and held by foreigners the country is not the beneficiary Where the licence has been given on the basis of a patent a duopoly is established and if there are a number of licencees or assignees, it becomes an oligopoly Even if licences are obtained by the indigenous manufacturers heavy royalties have to be paid by them It has also been argued that a large number of patents are held with a view

has been stated that the majority of the infringement actions relate to import from non-patent countries rather than to the infringement of pharmaceutical manufacture. Foreign owned patents are not taken out to provide their local utilisation but rather to protect the export market in the country from competition by rival, mostly, foreign manufacturers. In the reply to the questionnaire issued by the United Nations in the course of an enquiry on the role of *patents in the transfer of technology* to developing countries, it was stated that India had not derived any substantial benefits from patents held by foreign nationals and this was attributed to the reluctance of the patentees to work their inventions in India either by themselves or by granting licences to Indian concerns. It was however admitted that India was not sufficiently technologically advanced to work most of the patented inventions.

*The case for patents.*—The arguments advanced in favour of grant of patents with particular reference to the drug industry are that patents encourage research and inventions. In the field of medicine innovation is a feature which was introduced since 1935. Before that it was taken for granted that in the matter of nutrients the possibilities of new techniques did not exist. It is today accepted generally that research is based mostly on patent laws and if patents are abrogated, there would be no incentive to undertake research. If there were no patent right discoveries would be shrouded in secrecy and others would instead of making honest efforts to build upon research already undertaken, desire to violate the secret discoveries. This would also be a most retrograde step from the point of view of technology and scientific progress. The odds of success in pharmaceutical research are 3000 to 1, and if the inventor is not to enjoy the benefits of his discovery and if it is to become public to be utilised by those who did not make any contribution to it, there would be no point in his undertaking research at such heavy cost. The example of Italy is cited where no patents exist in respect of drugs and therefore no incentive for research. Whatever is discovered by anyone becomes the common property of all and can be copied by anyone. The drug industry today subsists on invention and most of the drugs in common use today were not known thirty years ago. If the patent system is withdrawn the incentive to innovate would be taken away, since discoveries cannot be made without substantial outlay on research. In the absence of patent protection there will be little or no incentive for the investment of capital in new methods of production, which may otherwise be considered unprofitable.

In India only about 12% of the 800 leading drugs are subject to patent protection, and it has been contended that even if the argument of monopoly and misuse is accepted it would be applicable only to the drugs which are under patent system.

In the absence of patent laws discoveries made elsewhere can be used and it is a great hindrance to the healthy industrial progress of a country Italy therefore desires to enact patent laws in order to have lawful and approved access to foreign inventions

There is provision for compulsory licensing in the existing patent law in India, but, almost no applications have been made In effect, in addition to the knowledge of the patent process the know-how for putting the process into operation is also very necessary, and it is generally not possible to have access to it without the co-operation of the patentee.

It has been sometimes argued that the developing country may abrogate the patent system since it is highly unlikely that it would be a substantial holder of any large number of patents On the other hand it has also been said that patent licencees are more amenable to government control than unpatented know-how The know how agreements involving unpatented formulae, processes and blue-prints trade secrets, etc, are equally, if not, more important than the licensor's patent rights because the patent information is not sufficient to enable a third party to work the invention unless it also has access to the complementary unpatented [illegible] country [illegible] will not [illegible] is found that the development has not reached such a stage where, without foreign assistance, patents can be worked, it would be advantageous to maintain a patent system until such time as the country can rely upon inventions made by others When a stage is reached when it will be in a position to export its products it would need to rely in its own innovations and there would be little or no incentive to undertake research for the purpose of building up new drugs for the home market or for export

It is also stated that inventions without full patent laws results in sub-standard drugs as has been effectively proved by examination of samples from countries which do not respect patent rights It has been brought to our notice that in the case of a particular drug Librium which is made in numerous brands in Italy, the original producer Roche has more than 76 per cent of the market in Italy itself, where there are as many as 18 other imitators

14.7.2. The Organisation of the Pharmaceutical Producers of India has stated that the patents law not only encourages and stimulates inventors to work on and make greater inventions and discoveries but also assures those who invest capital in research and development that any invention which may be made, will be protected for a prescribed period by an exclusive privilege granted to the inventor. It has been represented that withholding the granting of patents from May 1963 under the Defence of India Rules has hampered introduction of new products. Because of this ban over 2000 applications for new patents are stated to be pending with the patent office. The Organisation has further added that out of about 800 drugs in common use in India today, only some 90—100 (*i.e.* about 12 per cent) are covered by valid patents. There is nothing to prevent the unfettered manufacture of the over 700 and odd drugs ; and even in the case of the small number covered by patents, OPPI is of the view that the existing law provides adequate privisions to obtain licences for their production.

14.7.3. The Indian Drugs Manufacturers' Association, on the other hand, has made the following observations :

(i) In the drugs industry, the mere existence of patent protection is not guarantee of invention, nor is its absence much of a barrier. Patent is not necessary to recoup the investment by an inventor.

(ii) High prices and fixation of such prices for drugs by the manufacturers in India are because of the monopolistic features and abuses of protection by patent.

14.8. It has been brought to our notice that in the five years from 1957 to 1961 a total of 20,785 patents were applied for in India. Of these the applications from foreigners were 17,689 or over 85 per cent. The proportion of foreign applications in U.S.A. is 20 per cent, in U.K. 47 per cent in West Germany 32 per cent and in Japan 24 per cent, while in the East European countries the proportion is understandably much lower. The impressively large number of foreign applications for patents in India is said to be misleading since the patents are alleged not to have been taken out in the interest of the economy of the country or with a view to manufacture of the products patented but with the main object of protecting the patentee from competition by rival manufacturers particularly those in other parts of the world. It was also brought to our notice that in the case of certain products the manufacturer had taken out patents for all possible processes of manufacture in order to exclude the possibility of the drug being

manufactured by any other entrepreneur It has been stated that such comprehensive fortification with patents where only one or two processes are used but the patentee excludes the utilisation of the remaining numerous processes which are technologically accessible to others too constitutes a misuse of the provisions of the Patent Law in as much as the patentee acquires the monopoly for a particular product and all the possible processes which could be applied for its production resulting in the ill effects to which such monopoly is likely to lead To one the prices of drugs manufactured under such fortified patents in India are said to be very high in comparison with those in the export market or even when compared to those prevailing in other countries for internal sales

14 9 The main features of the Bill now before the Parliament so far as the pharmaceutical industry is concerned are

(1) Reduction of the period of patent

(2) Compulsory licensing with stipulation of the maximum rate of royalty

(3) Limitation of patents to processes only and

(4) Provision for the opposition of the patent on payment of compensation in public interest

It has been stated that before a patent can be marketted a number of years have to elapse during which production is set up It has been variously estimated that the developmental stages take a number of years The model Patent Law for Developing countries sponsored by the United International Bureau for the protection of the intellectual property has adopted the term of 20 years and in the draft European Convention the period of 20 years has been proposed

2 In U K there is provision for compulsory licensing but it does not limit the amount of rent to be paid The actual rates are adjudicated by the Controller and vary between 7½ and 10 per cent The Kefauver Report suggested eight per cent of the gross value of the drug and in this context it has been argued that the maximum rate fixed in the present Patent Bill is low

3 By limiting the patents to process only the unhealthy tendency to patent all possible processes would grow

Since the Patent Bill is already before the Parliament we have only mentioned facts as these have been brought to our notice and have not gone into the evaluation of the points mentioned for or against the legislation

14.10. We would, however, like to observe that Patent Law is essentially meant to encourage inventions and in the national interest. Hence, all precautions need to be taken to see that Patents which are granted in our country either to indigenous or foreign inventions are not abused, *i.e.* are not utilised to prevent further development.

14.11. The patent rights of manufacture and sale as related to the specified basic drugs in this country are as in Table 14.2.

TABLE

*Position of patents in respect of the*

| Sl. No. | Name of the drug | Product plus process patents | | | Process patent only | | | Patent for composition containing product not limited to any process | |
|---|---|---|---|---|---|---|---|---|---|
| | | Granted | Expired or ceased | Extent | Granted | Expired or ceased | Extent | Granted | Expired or ceased |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Vitamin A . | 9 | 6 | 3 | 6 | 4 | 2 | .. | . |
| 2 | Vitamin B12 . | 14 | 10 | 4 | 9 | 8 | 1 | .. | ... |
| 3 | Vitamin C . | 4 | 4 | .. | .. | .. | .. | .. | .. |
| 4 | Sulphadiazine . | 5 | 5 | .. | .. | .. | .. | .. | .. |
| 5 | Penicillin . | 63 | 46 | 17 | 18 | 11 | 7 | .. | ... |

It would be observed ... no patents for process or products ... as process patents are ... Streptomycin and ... but only product patents, which is a matter of surprise since it is understood that the present law recognises only process patent and by implication product patents also, but not product patents by themselves

14 2

18 *drugs under inquiry*

| | | Particulars of extent patents | | | | | |
|---|---|---|---|---|---|---|---|
| Extent | Whether Patentee or Assignee | Name | Patents held | | | | |
| | | | Patent plus process | Patent only | Process only | For composition containing product not limited to any process | Total |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| | Patentee | 1 F Hoffmanno-La Roche & Co. Switzerland | 1 | | | | 1 |
| | | 2 N V Philips Gloeilamparfabricken Holland | 1 | | 2 | | 3 |
| | | 3 Dr Salimuzzaman Siddiqui Dr Syed Mahdihassan, Syed Maqsood Ali Syed and Abdul Haq India and Abdul Haq India | 1 | | | | 1 |
| | Patentee | Roussel Uclaf France | 3 | 1 | | | 4 |
| | Assignee | E. R Squibb & Sons Inc USA | 1 | | | | 1 |
| | Patentee | 1 Biochemie Gesellschaft Mit Beschranteter Haftung Austria. | 1 | | | | 1 |

TABLE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| ( | Streptomycin | 21 | 17 | 4 | 4 | 4 | .. | .. | |
| 7 | Chloramphenicol . | 57 | 43 | 14 | 35 | 31 | 2 | .. | .. |
| | Tetracyclines | 62 | 36 | 26 | 8 | 2 | 6 | | |

14.2—*Contd.*

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|
| | | 2 Standard Pharmaceutical Works India | 2 | | | | 2 |
| | | 3 Knud Abildgaard Denmark | | 2 | | | 2 |
| | | 4 Alembic Chemical Works Co Ltd India | 1 | 1 | | | 2 |
| | | 5 CIBA Ltd . . | 1 | | | | 1 |
| | | 6 Novo Terapeutisk Laboratories A/S Denmark | . | 1 | | | 1 |
| | | 7 Farbenfabriken Bayer Aktiengesellschaft Federal Republic of Germany | 3 | | | | 3 |
| | | 8 Beecham Research Laboratories Ltd U K | | 1 | | | 1 |
| | Assignee | Beecham Group Ltd U K. | 9 | 2 | | | 11 |
| | Patentee | 1 Chemie Gruenthal G m b H, Germany | 2 | | | | 2 |
| | | 2 Chas Pfizer & Co Inc, U S A | 1 | | | | 1 |
| | Assignee | E R Squibb & Sons Inc. U S A | 1 | | | | 1 |
| | Patentee | 1 Parke, Davis & Co U S A. | 10 | 1 | | | 11 |
| | | 2 Chinoin Gyogyszer Es Vegyeszeti termeuek Gyara R T Hungary | 1 | | | | 1 |
| | | 3 Carlo Erba S P A Italy | 2 | | | | 2 |
| | Assignee | Parke Davis & Co, U S A | 1 | 1 | | | 2 |
| | Patentee | 1 Chas Pfizer & Co, Inc U S A | 5 | 1 | | | 6 |
| | | 2 American Cyanamid Co, U S A | 13 | 4 | | .. | 17 |
| | | 3 Bristol Laboratories Inc, U S A | 4 | 1 | | . | 5 |
| | | 4 Koninklijke Nederlandsche Gist & Spiritusfabriek N V, Netherlands | 1 | | | | 1 |

TABLE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 9 | *Amodiaquin* . | 2 | 2 | .. | .. | .. | .. | .. | .. |
| 10 | Chloroquin . | 1 | 1 | .. | .. | .. | .. | .. | .. |
| 11 | Iodo-chlor-hydroxy-quinoline. | 2 | 2 | . | .. | .. | .. | .. | .. |
| 12 | Chlorpropamide . | 5 | 1 | 4 | 4 | 2 | 2 | 1 | .. |
| 13 | Tolbutamide . | [illegible] | 1 | 5 | 1 | 1 | .. | .. | .. |
| 14 | Insulin . . | [illegible] | 10 | 8 | 7 | 4 | 3 | .. | .. |
| 15 | I. N. H. . . | 1 | 1 | .. | .. | .. | .. | .. | .. |
| 16 | P. A. S. . | 7 | 7 | .. | 5 | 5 | .. | .. | ... |
| 17 | Tetanus Anti-toxin | .. | .. | .. | .. | .. | .. | .. | .. |
| 18 | Prednisolone . | 3 | 2 | 1 | 4 | 2 | 2 | .. | .. |

14.2—*Concld*

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|
| | | 5 Spola Sdruzeni Pod niku Pro Zdra otnicklow Vyrobu Czechoslovakia | 1 | | | | 1 |
| | | 6 Horchel Smith U K | 1 | | | | 1 |
| | Assignee | Pfizer Corporation U S A | 1 | | | | 1 |
| 1 | Patentee | 1 Farbwerke Hoechst Aktiengesellschaft Vormals Meisten Lucius & *Bruning Germany* | 4 | | | | 2 |
| | | 2 Merck & Co Inc U S.A | 1 | | | | 1 |
| | | 3 Chas Pfizer & Co Inc, U S A | 1 | 1 | | 1 | 3 |
| | | 4 Haffkine Institute India | 1 | | | | 1 |
| | Patentee | 1 Farbwerke Hoechst Aktiengesellschaft Vormals Meisten Lucius & Bruning Germany | 3 | | | | 2 |
| | | 2 Merck & Co, Inc U S A | 1 | | | | 1 |
| | | 3 *Haffkine* Institute India | 1 | | | | 1 |
| | Patentee | 1 Novo Terapeutisk Laboratorium A/S Denmark | 3 | 1 | | | 4 |
| | | 2 Henry Marinus Christensen *Denmark* | | 1 | | | 1 |
| | *Assignee* | *Novo Terapeutisk Laboratorium A/S, Denmark* | | 1 | | | 1 |
| | Patentee | 1 Glaxo Group Ltd U K | 1 | | | | 1 |
| | | 2 Merck & Co, Inc U S A | | 1 | | | 1 |
| | Assignee | E. R Squibb & Sons Inc U S A | | 1 | | | 1 |

## CHAPTER 15

## MATERIAL AND OPERATIONAL EFFICIENCIES OF PROCESSES

15.1. One of the terms of reference to us is the consideration of the operational efficiencies of the processes in so far as these are related to the price structure. These could be viewed from more than one standpoint. One of these would be the consideration of the norms of consumption of raw material. A second, the relationship of conversion costs to the total cost of the drug or to that of the cost of the raw materials. The third, the comparison of the fair prices arrived at after cost analysis, with the c.i.f. prices of the equivalent imported drug. A fourth, an investigation into the actual process of manufacture employed and the extent to which the most efficient and the more economical processes have been or can be adopted.

15.2. As to the norms of the consumption of raw material we find that no data of the process obtaining in other countries which are in a more advantageous position with regard to the production of these products or even in the units which are the principals of those operating in India are available. It is therefore not possible to base the analysis on any international standards. We have therefore to fall back upon the data or material available from the indigenous units. In this case too our sample is very limited. We have only a few cases where more than two units manufacturing the same product which has been examined in detail with regard to the materials used and in almost half the cases there is only one unit manufacturing the product or drug. Again, where there are two units manufacturing the same drug it has invariably been discovered that the raw materials used by them are not identical even though the final product is the same. In the case of a single unit manufacturing the drug no standards for judgement can be framed.

15.3. Coming to conversion costs, these vary for each drug and for each unit even for the same drug. We are confronted with a series of disparities which it is not possible either to understand or to reconcile but since these are in the nature of actualities it is not possible to overlook them. It was suggested to us that certain norms of proportion with regard to conversion costs based on material costs may be framed and that assumption with regard to future conversion costs may be made accordingly. We have very

carefully considered this point of view but find that it is not possible to do so far a number of reasons The capital structure as well as the administrative set up of each unit is different and the conversion costs are to a large extent influenced by these factors To require that this structure should be modified for the sake of one

n t into the cost of which we justified Here again we are can make only marginal adjustments and cannot require a certain pre-determined standard to be adhered to

15 4 When we compare the c i f prices of imported identical

and the future fair prices as worked out by us for the specified drugs is from 19 to 343 per cent higher in the case of the indigenous manufacture If the range were narrower a certain degree of comparison could have been possible and conclusions could have been drawn where any particular product shows significant deviation In the present case it is not advisable to rely upon such a comparison for the purpose of determination of the degree to which the indigenous manufacturers could be considered to employ operational efficiency to the requisite degree

15 5 There is yet another field of investigation to which one could point and this is the degree of operational efficiencies actually achieved the processes adopted for the manufacture of the specified drugs Here we find that it is a highly technical and specialised field on which value judgements can be passed only by those very closely associated with the process of manufacture and those who are not only fully conversant with the manufacturing process but are also in possession of complete data with regard to the installations and the disposition of the installations in the units concerned together with other facilities available to them We have therefore refrained from offering comments or to suggest improvement on the manner in which units are run or the drugs produced

15 6 We have nevertheless in the course of the cost examination of the units and their drugs and the discussions thereon tried to make comparisons and also to make suitable marginal adjustments where we have found the cost of the raw materials or conversion to be excessive or not justified in a given set of circumstances As to the quantities of raw material used it is very difficult

to pass judgement on the basis of theoretical enunciations. The question of conversion charges and their relationship to the total cost of the drug or *inter se* to the material cost has also been discussed in the same context but there are many variations and complex factors involved in the production of drugs which operate as serious limitations to ordering any set of standards and expecting that the different units in the field would be able to adhere to these or even to reach them.

15.7. While we have not been able to make any investigation besed on norms or standards we have nevertheless been struck by certain disparities and anomalies which we think should be brought to the notice of Government as well as to that of the unit. concerned in order that improvements or substitution can be made. We propose therefore in this chapter to deal only with the following issues and to offer our recommendations in respect of them.

(1) Cases of manufacture from the penultimate or high level imported intermediates in preference to raw materials available indigenously.

(2) Result of the utilisation of two alternative processes available for the production of the same drugs, and the one more advantageous from the point of view of conservation of foreign exchange and cost of production.

(3) Low yields—manifestly poor yields in comparison to those achieved in other countries.

(4) Substitution of one drug by another where the therapeutic efficacy of both is the same, but one can be manufactured only from imported material and the other from indigenous raw materials also.

15.7.1. It is understandable that when a licence is initially granted the unit concerned.is not in a position to go into the entire process of manufacture straightaway, and needs therefore some preparatory period for setting up the production from the basic materials. During the intervening time it has to import penultimate intermediates for the manufacture of the finished goods. By gradual stages the manufacturing processes are enlarged with the aim that after a given period the manufacturer would no longer need to import high level intermediates but make use of basic materials available either within the country or imported from abroad. But it has been found that in a number of cases progress in the substitution of penultimate intermediates by imported or indigenously manufactured raw materials has not been as satisfactory or rapid as was expected. Many of the units initially licensed

for the manufacture of a drug in the country continued to import for a long time to come the drug in an almost finished form making only a few mixing operations and after doing these marketted them as manufactured in India

*Vitamin B 12* Themis Pharmaceuticals has been licensed for the manufacture of Vitamin B 12 and it has started manufacture from broth concentrate a penultimate intermediate but it is hoped that the period during which this will be allowed will not be long and that within a fixed and foreseeable period the unit would be able to start manufacturing the drug from molasses

*Amodiaquin* is manufactured by Parke Davis from imported 4 7 dichloroquinoline and paracetamol While paracetamol is indigenously available, 4 7 dichloroquinoline is being imported by this unit The same intermediates is being manufactured by Bengal Immunity from metachloro aniline which is available indigenously In the interests of saving of foreign exchange as well as possible economy of costs the unit should manufacture 4 7 dichloroquinoline from metachloro aniline particularly when another unit with lesser facilities can do so and it should not therefore be allowed to import this intermediate On the other hand it is not possible to do so, Bengal Immunity should step up its production of 4 7 dichloroquinoline, so that it can meet the demand of other units also The same problem exists in the case of Chloroquin which is manufactured by Bayer as well as Bengal Immunity

*Chlorpropamide* is manufactured from basic stages by Bengal Chemical starting from monochloro-benzene while Pfizer manufactures it from a penultimate intermediate para chlorobenzene sulfonamide which is imported Mono chlorobenzene is indigenously available and it should be possible for Pfizer with its extensive facilities to manufacture this intermediate instead of importing it (1) Benzene is converted in three step to metachloraniline, this intermediate is produced locally, (2) Condensation of melonic ester (not produced in the country but desirable on account of it being a very important material) with ethylorthoformate (not produced in the country) gives *ethoxymethylenemalonate*, (3) condensation of metachloroniline (step 1) and ethoxymethylene malonate (step 2) gives chlor hydroxyquinoline which with phosphorous oxychloride given *Dichloro quinoline*, (4) Starting from ethylacetoacetate, and using other basic intermediates ethyleneoxide and diethylamine, the compound called "novaldiamine" is produced in 4 steps, which is not quite easy All the three basic intermediates are not at present produced in

the country but would very shortly be in production;(5) condensation of dichloroquinoline (step 3) and "novaldiamine" (step 4) gives chloroquin. This is a comparatively easy step.

Bengal Immunity starts with step 3, purchasing the locally produced metachloraniline (step 1) and importing ethoxymethylene malonate (step 2), and manufactures dichloroquinoline; this is a step involving use of dangerous chemicals and producing fumes. This firm at present imports novaldiamine (step 4) and produces, chloroquin by step 5. It would be desirable for other units producing Chlorpropamide to utilise the same process as adopted by Bengal Chemical or alternatively more efficient one or purchase locally produced intermediates.

*Iodo-chlor-hydroxy-quinoline.*—This compound is manufactured by two methods: Method 1: 8-Hydroxyquinoline (imported but can be manufactured locally) is treated into iodine (imported) and chlorine to yield the final drug in one step (Bengal Chemical Neogy Lab.). This is an easier method. Method 2: (i) Chloro-hydroxynitrobenzene, an intermediate is prepared by two methods: (a) starting from phenol in 3 steps as by East India Pharmaceutical or (b) treating dichloro-nitrobenzene (at present imported by Atul but can easily be prepared from locally available dichlorobenzene by nitration) with alkali; (ii) chloro-hydroxy-nitrobenzene is reduced to chloro-hydroxyaminobenzene which by a standard reaction gives chloro-hydroxyquinoline; (iii) the last mentioned compound is treated with iodine to get the final product.

Iodine has to be imported in any case since it is not produced in the country. We suggest that 8-hydroxyquinoline or dichloro-nitrobenzene should be produced locally. It is understood that compounds replacing iodine by bromine and chlorin are being developed and these may be used. The cost of the product by method 1 is Rs. 39.37 to Rs. 41.48 while by the laborious second method it is Rs. 60.93 per kg.

*Tolbutamide* is being manufactured by three units, namely, Haffkine Institute, Unichem labs. and Hoechst. Hoechst is one of the largest manufacturers of chemicals in the world and the Indian organisation which is a subsidiary of the German company, manufactures this drug from a penultimate intermediate toluene-sul-fonylurethane condensing it with Butylamine both of which are imported. The cost of the intermediates is higher than the price of the equivalent finished drug manufactured abroad. On the other hand Haffkine claims to have manufactured this drug from

basic stages and its cost worked out to near about the c i f price Its rights of licensing this drug had however been contested by Hoechst and the matter is under litigation Recently Hoechst has purchased its requirements of sulfurethane from Atul Products at Rs 60/- per kg which would mean a further rise of Rs 20/ per kg in its price

**15 7 2 Results of the utilisation of two alternative processes**

*Vitamin A*—The basic raw materials used by both the firms *viz* Glaxo Labs and Roche Products are indigenous and the same, but the processes employed by them are different In the case of one unit the cost of production is substantially lower than that of the other It would therefore be desirable to go into the reasons for this high cost of production in the case of the other unit and if they are due to any process deficiencies they should be made to adopt the more efficient process

*Streptomycin* is being manufactured by Hindustan Antibiotics and Synbiotics The process of extraction of streptomycin from broth in the case of Hindustan Antibiotics involves the formation of a clacium chloride complex, while Synbiotics extracts it directly by use of ion exchange resins The process used by Synbiotics is more efficient and results in saving or raw material to the extent of almost 30 per cent and a lower cost of production despite the lower capacity of this unit

*Chloramphenicol* is being manufactured by Parke Davis from imported para nitro acetophenone as the starting raw material while Boehringer Knoll use 'benzaldehyde' and ethylene oxide The process used by Boehringer-Knoll is more efficient and the total raw material cost is also 23 per cent lower Since ethylene oxide is now available from local sources, it may not be necessary in future to manufacture Chloramphenicol from the imported raw materials

*I N H* Manufacturers using gammapicoline as the starting material adopt either the Nitric Acid oxidation method or the Potassium Permanganate method for the manufacture of I N H Thus *Pfizer adopts the Potassium Permanganate method* while Biological Evans and Bengal Immunity adopt the Nitric Acid oxidation method As both nitric acid and potassium permanganate are indigenously avilable both methods are equally suitable so far as indigenous utilisation of raw materials is conerned However from the point of efficiency the nitric acid oxidation method is considered more efficient

15.7.3. **Case of poor yields**

*Vitamin C* is being manufactured only by one unit in the country. The yield of Vitamin C obtained by this unit is said to be 36 per cent as against 60 per cent achieved by manufacturers in other countries. The other unit licensed for the manufacture of Vitamin C has not yet gone into production. The unit needs to pay serious attention to the reasons for the low yields.

*Penicillin* : The titre of Penicillin in India is only between 8,500 to 9,000 i.u./Kg. This is low as compared to that of other developed cuntries. which have been able to achieve titres of 20,000 i.u./Kg.

*Prednisolone* : The efficiency of process in use by Wyeth Labs is low. This unit obtains a yield of Prednisolone of five to six per cent starting from diosgenin while in U. S. A. the same process gives a yield of ten per cent and more.

15.7.4. **Substitution of one drug by another**

*Sulphadiaine* : May & Baker manufactures this from two imported raw materials acetanilide and 2-amino diazine. While acetanilide may be manufactured by Hindustan Organic Chemicals, there is no proposal to manufacture 2-amino diazine and the c.i.f. cost of aminodia ine for the manufacture of one kilogram of sulphadiziane is Rs. 22.30. Sulphadiamidine which is therapeutically similar to sulphadizine will shortly be manufactured from acetanilide and amino-base both of which would be available indigenously. In these circumstances it is relevant to consider whether the manufacture of sulphadiazine involving a perpetual drain of foreign exchange should be continued once the manufacture of sulphadimidine from predominantly Indigenous raw materials is established.

# CHAPTER 16

## STANDARDS

16 1. Drugs are probably the only commodity for which standards are laid down by law and the enforcement of which is prescribed under a statute As contradistinct from any other product these standards are not for the minimum but for the optimum As a result of the recommendations of the Drugs Inquiry Committee and in response to the persistent demand from the public the Drugs Act was enacted in 1940 This Act provides for and recognises certain standards in respect of drugs manufactured in the country of imported and requires the compliance of these standards

16 2 The British Pharmacopoeia and the British Pharmaceutical Products are the two books on standards which were first prescribed under the Drugs Act Later on other Pharmacopoeias *such as the United States Pharmacopoeia and National Formulary* of the United States were also approved When the International Pharmacopoeia was published by the World Health Orga[illegible]
tion [illegible]
Unio[illegible]

16.3 Under the provisions of Section 5 of the Drugs and Cosmetics Act, 1940 a statutory body known as the Drugs Technical Advisory Board was constituted in 1942 to advise the Central and State Governments on technical matters arising out of the administration of the Drugs Act and to carry out other functions assigned to it by the Act In 1944 the Government of India asked the Board to prepare material for a list of drugs for use in India which were of substantial medicinal value and to recommend standards to secure their usefulness as well as tests to assay their identity and purity. An *ad hoc* C[illegible]
purpose and it prepared a list wh[illegible]
Technical Advisory Board and [illegible]
as the Indian Pharmacopoeia list Subsequently, Government constituted a permanent Indian Pharmacopoeia Committee in 1948 and this Committee brought out an independent Pharmacopoeia which was published in 1965 The Indian Pharmacopoeia Committee was reconstituted in 1954 The second edition of

Indian Pharmacopoeia was published in 1966. A number of new monographs have been incorporated in this edition. These are standards for some vegetable products such as Jata manshi, Rasna and Vidang. It functions through several sub-committees which collect and shift material relating to drugs which are proposed to be included in the Pharmacopoeia. The present Pharmocopoeia includes standards for about 900 drugs and their method of analysis. The Drugs Control Organisation serves as the secretariat for the parent committee as well for its sub-committees and the compilation of standards and other information is done by the organisation.

16.4. As regards the drugs included in the Indian Pharmacopoeia Standards of identity, purity and strength specified in the Pharmacopoeia are the standards. For other drugs not included in the Indian Pharmacopoeia and which are included in the Pharmacopoeia of any other country, the standards in such Pharmacopoeia are to be considered mandatory. For patent or proprietary medicines the standard to be complied with are those displayed in the form of a formula or list of ingredients on the label or container. For vaccines, sera, toxin, toxoids, anti-toxins and antigents an biological products the standards main tained at the International Laboratory for Biological Standards, Stantans Seruminstitut, Copenhagen supplemented by any other standards that may be laid down are prescribed. For vitamins, hormones and analogous products the standards are thus maintained at the International Laboratory for Biological Standards, National Institute for Medical Research, London supplemened by Indian Standards, if any. Where the same drug is mentioned in more than one of the recognised pharmacopoeias and also the Indian Pharmacopoeia the latter holds the pride of place in so far as drugs mentioned in it are concerned and it is to be considered as the sole book of standards for this purpose.

16.5. *National Standards :* The Central Durgus Laboratory, Calcutta and the Central Research Institute, Kasauli serve as centres for distribution of international standards, of pharmacological and immunocologial substances respectively. These are distributed to analytical laboratories and pharmaceutical laboratories in the country for use in the standardisation of testing of drugs. The Central Drug Laboratory has, in view of the necessity for the preparation of comprehensive National standards, initiated a programme for the formulation of such standards with the help and collaboration of laboratories all over the country both belonging to the Government as well as to the industry.

The National standards for Insulin, digitalis powder, posterir pituitary tetracycline hydrochloride and phenoxy menthyl penicillin have been prepared at the Central Drug Laboratory

16 6 The National Formulary is a list of essential drugs and their formulations In the case of formulary also the draft is prepared by the Drugs Control Organisation and placed before the Formulary Committee which consists of experts and others in various branches of medicines and pharmacy It is published after the Committee has considered and approved of it

16 7 The Indian Standards Institution is mainly concerned with the standards relating to the raw material and pharmaceutical chemicals The standards followed by some of the manufacturers of basic drugs and formulators in the country are as given in Table 16 1

TABLE 16 1

(A) *Standards followed by manufacturers of basic drugs*

| Unit's Name | Name of the Drug(s) | Standard(s) followed |
|---|---|---|
| 1 | 2 | 3 |
| 1 Alembic Chemical | Penicillin | I P /B P /U S P |
| 2 Bengal Chemical | I N H | B P |
| | Ildo- chlor hydroxy quinoline | U S P<br>B P |
| 3 Bengal Immunity | I N H | B P |
| | Chloroquin | B P & U S P |
| | Tetanus Anti toxin | B P |
| 4 Biological Evans | I N H & P A S | B P |
| 5 Haffkine | I N H<br>Tolbutamide<br>Chloropropamide | I P & B P |
| 6 Hindustan Antibiotics | All froms of Penicillin | I P |
| | Streptomycin Sulphate | I P. |
| | Dihydrostreptomycin Sulphate | I P. |
| | Oxytetracycline HCL | I P |
| | Chlortetracycline HCL | I P |
| | Vitamin C | I P |

TABLE 16.1—*Contd.*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 7. | Merck Sharp . . . | Cyanocobalamin | U.S.P. |
| | | Prednisolone | U.S.P. |
| 8. | Parke-Davis . . . | Chloramphenicol | U.S.P./I.P. |
| | | Amodiaquin | B.P./I.P. |
| 9. | Pfizer . . . . | I.N.H. | I.P. |
| 10. | Roche Products . . . | Vitamin A | I.P. and U.S.P. |
| 11. | Sarabhai Merck . . . | Vitamin C | I.P./B.P./U.S.P. |
| 12. | Synbiotics . . . | Streptomycin Sulphate | U.S.P. |
| | | Tetra cycline HCL | U.S.P. |
| | | Isoniazid | U.S.P. |
| 13. | Wander Pharmed . | P.A.S. Sodium | B.P. |
| 14. | Wyeth Labs. . . . | Prednisolone | U.S.P. |
| | *(B) Standards followed by formulators* | | |
| 1. | Bayer . . . . | Chloroquin Tabs. | B.P. |
| 2. | Bengal Chemical . . | I.N.H. Tabs. | U.S.P. |
| | | Diabinol Tabs. | B.P. |
| | | Cyanocobalmin Inj. | B.P. |
| | | Tetanus Anti-toxin | I. P. |
| 3. | Biological Evans. . . | I.N.H. Tabs. | B.P. |
| | | Sodium P.A.S. Granules | B.P. |
| | | A.T.S. Inj. | |
| 4. | Boehringer Knoll . . | Chloramphenicol Caps. | B.P. |
| 5. | Parke-Davis . . . | Chloramphenicol Caps. | U.S.P. |
| | | Amodiaquin Tabs. | |
| 6. | Pfizer . . . . . | Tetracyline Caps<br>Terramycin Caps.<br>Isonex Tabs.<br>Insulin Lente<br>Procaine Penicillin fortified. | I.P. |
| | | Pronapen<br>Diabiness Tabs. | U.S.P. |

NOTE :

I.P.—Indian Pharmacopoeia

B.P.—British Pharmacopoeia.

U.S.P.—United States Pharmacopoeia.

recommended that Government should make arrangements to streamline the machinery for the compilation and to provide adequate arrangements for laboratory and staff for collection of material for the purpose of maintaining it up to-date

CHAPTER 17

# QUALITY

17.1 It is a matter for considerable gratification that India is one of the few countries where comprehensive statutory control of standards for drugs exists and there are no loopholes which may enable unscrupulous manufacturers to market sub-standard drugs. Statutory control of the quality of drugs manufactured or marketed in India is comparatively recent and is almost coeval with the era of Independence; for it was only in 1947 that first steps were taken to regulate the import and manufacture of drugs.

17.2 Control over standards of drugs is effected by the system of licensing. Imports, too, of certain classes of products such as biologicals can only be made under a licence. Similarly manufacture and sale of drugs in the country can only be undertaken under a licence. Imported drugs are subject to inspection not only at the time of import but also subsequently before their distribution.

17.3 The Drugs and Cosmetics Act vests with the Central Government powers to control the quality of imported drugs but the responsibility for enforcement of controls over the quality of drugs manufactured or sold in the country rests with the State Governments. While there is statutory division of responsibility between the Central and State Governments for the enforce ment of the provisions of the Act, the Central Goverment in the interests of uniform procedure throughout the country coordinates the action taken by the States and offers expert advice and such other assistance as is necessary for the efficient enforcement of the Act.

17.4 **Imported drugs :**

17.4.1 The import of drugs is allowed only through certain designated ports where officers of the Central Drugs Standard Control Organisation can keep a check on the quality of such drugs by inspecting consignments and sending samples for tests. Regulatory measures on biological and special products are more stringent. These drugs can be imported only against a licences issued under the Drugs Act. While applying for such licence, not only importers but also manufacturers abroad are required to abide by certain

conditions which in addition to permitting inspection of manufacturing premises abroad, provide for the withdrawal of stocks of drugs from the domestic market, should unfavourable reports be received on them subsequent to import Apart from the check at the time of import, officers of the Central Drugs Standard Control Organisation keep a running check on the quality of biological and special products by testing samples from importers' godowns where the drugs are stored In case the test reports on these are not favourable, the stocks of the particular batch already issued for sale are withdrawn One of the conditions of the Import Licence is that the licensee should maintain records of issue to facilitate such withdrawal

17 4 2 A vital aspect of quality control is the check exercised on the import of "New Drugs", that is, drugs which have not been officially included in any of the approved Pharmacopoeias or have been newly introduced and which though not subjected to any extensive use on human beings, except in a limited number of clinical trials, are considered as safe for use Such drugs are not allowed to be imported unless they are approved under the Drugs Act There is also a provision in the Drugs Rules to the effect that no new drug which is not permitted to be used in the country of its origin can be imported into this country These regulartory measures are necessary to ensure that the people of this country are not used for experiments with new drugs

17 5 1 For exercising effective control over the quality of drugs manufactured or sold in the country a stringent scheme of licensing has been devised, reference to which has been made in chapter 4 Manufacturing premises are to be inspected also at the time of the renewal of licences The conditions for licensing for the manufacture of biological and special products are more rigid, and inspection of firms engaged in the manufacture of such drugs is carried out by inspectors who have adequate experience of the manufacture and testing of such drugs The testing of samples is carried out by the Government Analysts appointed by the State Governments

17 5 2 The provisions for the grant of licences for sale of drugs enable the Licensing Authority to ensure that the sale premises are adequate, are equipped with proper storage accommodation for preserving the properties of the drugs to which the licence applies and are in charge of a person competent to supervise and control the sale, distribution and preservation of drugs

17 5 3 The Drugs Control Organisation collaborates with the Narcotics Department and with the Excise authorities in

regulating the import, manufacture and sale of narcotic drugs. This is possible because in each State there exists though not a wide net work, at least a nucleus of technically qualified persons including inspectors, forming the Drugs Control Administration. The latter is well suited for the task of enforcing the manifold restrictions relating to narcotic drugs such as, inspection of manufacturing and sales premises, checking of record prescription, forms of account and issue and scrutiny of applications from firms desirous of having quotas of narcotic drugs. Narcotic drugs can be sold only against medical prescription and manufacturers, chemists and druggists are required to maintain records in forms drawn up on the pattern of those obtaining in some countries where the enforcement of narcotic laws is very stringent.

17.6. **Testing facilities :**

17.6.1 Since quality control of drugs is mainly the function of the State drugs control administrations States have their own drugs control administration and have sometimes their own drugs control rules. Manufacturing units are inspected by the officers of the State Government who visit the premises of manufacture to check the process of fabrication and the facilities available for testing and quality control. For purpose of inspection certain States like Maharashtra have prescribed detailed forms which have to be filled in by the Inspector after each inspection. The Drug Control Rules provide the control of samples at all stages from the manufacturers' factory, depot, distributors' stores or even the retailers' shops. State Governments have powers to confiscate spurious and sub-standard drugs and prosecute manufacturers or stockists. The life period of drugs is mentioned in Schedule P of the Drugs and Cosmetics Act and the manufacturers are under an obligation to imprint the dates of manufacture and the expiry on the bottles and cartons along with batch number and the licence number. The facility which exists in each of the States for testing and the procedure followed by the State Drugs Controllers have been reported to be as follows :

1. Maharashtra : Haffkine Institute in Bombay which is a licensee under the Act undertakes the testing of drugs. Plans are however under way to have a separate testing organisation with independent staff and equipment. Standard procedure as laid down under the Pharmacopoeia involving chemical, biological, microbiological and instrumental analysis is followed for the testing of various drugs. In view however of analytical facilities that exist

at present at the Haffkine Institute a sampling programme is laid down in order to ensure optimum utilisation of the facility and avoid duplication of the work to effect economy in expenditure

2 West Bengal The State Government has a Drugs Laboratory in addition to utilising the services of the Central Drugs Laboratory, Calcutta The Drugs Laboratory of the State Government has recently been shifted to the premises of the combined laboratory building According to the report of the Committee on Drugs Control 1966 (The Borkar Committee Report) the laboratories have been well furnished and equipped but not properly staffed The units manufacturing drugs have their own laboratories and in case they do not have such facilities they make arrangements for getting their products tested at any other institution approved by the licensing authority for carrying out such tests

3 Gujarat There is a State Drugs Laboratory at Baroda for testing drugs and it has been reported that this laboratory is divided into the following divisions (1) pharmaceutical chemistry division, (2) pharmacology division (3) animal house and (4) microbiology division, and (5) pharmacognosy division The laboratory receives samples from various districts for the purpose of testing

4 Madras The Governnent Analyst undertakes testing at the Kings Institute, Gulndy of the samples taken by the Drugs Inspectors under Sections 22 and 23 of the Drugs Act, 1940 This Institute undertakes tests of drugs sent by manufacturers and collects requisite fees according to the schedule of rates given in schedule B of the Drugs and Cosmetics Rules On behalf of the manufacturers who do not have testing facilities for their drugs, Messrs Italab Pvt Ltd, Madras undertake testing

5 Mysore The State drugs control administration has a separate drug testing laboratory But certain biological and other special products are sent for analysis to the Central Drug Laboratory, Calcutta

6 Madhya Pradesh The Government Analyst is supposed to test sample sent to him But the extent of the laboratory facilities available in the State have not been intimated

7 Orissa There is no durgs control laboratory in the State and the samples are therefor sent to the Central Drugs Laboratory, Calcutta Some of the units have their products tested at Italab Pvt Ltd or Smith Stanistreet Co Ltd, Calcutta

8 Jammu and Kashmir This State Government is contemplating setting up of drugs laboratory, but no facilities exist so far

Other States namely, Andhra Pradesh, Haryana, Assam, Bihar, Delhi, Kerala, Punjab, Rajasthan and Uttar Pradesh did not reply to the question in respect of testing facilities available with them.

17.6.2. The Central Drug Laboratory and the Central Research Institute, Kasauli: The Central Drug Laboratory, Calcutta is a statutory institute set up under the provisions of the Indian Drugs and Cosmetics Act and its function is to analyse samples of imported products sent by the various ports in India for quality control of imported drugs. Where there is a dispute between the manufacturer or the vendor of the product and the State Drugs Control authority, the Central Drugs Laboratory acts as the appellate authority. As most of the States have not yet been able to build full-fledged testing laboratories, the Central Durg Laboratory carry out the function of Government analyst for all the States in India except the States of Madras, Gujarat and Maharashtra. It undertakes the analysis of drugs and samples sent by the Drugs Inspectors of the States concerned under provisions of the Drugs and Cosmetics Act. It does not however accept samples for analysis from manufacturers or other private organisations. Although the laboratory makes a charge to the State Government for analysis of samples sent by the State Drugs Control authority the fees have no relationship directly or indirectly to the price structure of the indigenously manufactured drugs and pharmaceutical preparations. The function of the Central Drug Laboratory for testing or serum, vaccines and sterilised biological sutures has been assigned to the Central Research Institute, Kasauli. The Central Drug Laboratory has also research programmes directed towards the evolution of methods of better analysis and it also provides for facilities for training representatives from States and from the drug industry in analytical techniques. At the public enquiry it was stated that the Drugs control as applied, particularly well, in the State of Maharashtra, but this was not being done in other States to the same extent and that a certain amount of laxity prevailed elsewhere.

17.7 Evidence was tendered at the public enquiry to the effect that in addition to pharmacopoeial standards for quality control, there are certain factors which are known as therapeutic efficacy and biological availability. It was contended on behalf of some representatives of the industry that while the Drugs Controller guarantees the chemical purity of the drug, he was not in a position to do so in respect of the therapeutic efficacy of the drug of similar products of the different manufacturers. But the consumer was concerned only with therapeutic efficacy of the drug

It was stated that this was the main factor in creating greater demand for a drug or formulation produced by a particular manufacturer, in preference to those of others. The implication was that the therapeutic efficacy of such brands was greater than those of others even though all of them conformed to the same given standards. A challenge was also thrown out whether the Drugs Controller could guarantee the therapeutic efficacy of a new drug that was put on the market. It was stated by the Director, Drugs Control Administration, Maharashtra that the determination of the therapeutic efficacy of a drug did not form part of the Drugs Controller's work but that if the necessary provisions were included and facilities were made available, it would be guarnteed. In the course of the discussion it was asserted that 40 per cent of drugs were purchased for Government and public organisations, such as hospitals and corporations by issue of tenders. The drugs purchased were under generic names and the lowest quotations were generally accepted. No complaints about the therapeutic efficacy of these drugs had been received once they had been found to conform to the standards prescribed. This leads inevitably to the question whether the standards and procedure for assay prescribed in the Indian Pharmacopoea as well as its foreign equivalents are adequate to ensure the efficacy of the drugs or additional specifications are needed.

17.8 The term "physiological or biological availability" connotes the attribute of the dosage of the drug that constitutes a measure of the extent to which the active ingredient is taken up by the body in a useful form. From the practical point of view this attribute is significant only in respect of the dosage forms intended for oral administration. The extent to which the therapeutic constitutent of the pharmacopoeial dosage form intended for oral or topical use is available for absorption is influenced by a variety of factors, such as the manner of compounding, crystal size, diluents, excipients and other compounds and solvents or fluid vehicles in liquid dosage forms. The ideal solution to the determination of the therapeutic efficacy or biological availability with its attendant refinements would be the introduction of in vivo tests of all products, but it is not practicable. It is also difficult to devise a useful range of tests which could be specified in precise terms as a basis of routine control procedure. The official pharmacopoeas lay down specific tests for ensuring that the drugs taken are properly absorbed and utilised. In certain instances, however the present monographs in the *Pharmacopoeas do not necessarily* [illegible] the product or the patient and [illegible] additional methods need to be [illegible] time, measurement under

standard conditions, using simulated gastric and intestinal fluids. The maintenance of a high degree of physiological availability requires special attention to the various processes involved in the production of a drug. In any case the Pharmacopoea Commission is, it is understood, actively investigating the possible methods with a view to specify them in the Pharmacopoea. It is understood that in Denmark in addition to the disintegration tests, which are prescribed in the official pharmacopoeas, dissolution test is also routinely adopted for the esting of all compressed tablets. While it can be accepted in theory that therapeutic efficacy and biological availability are also factors on which future standards need to be laid down, it is not possible to assume simultaneously that merely owing to the fact that certain refinements in the process of manufacture are being claimed the products of a unit which makes such a claim is necessarily to be considered superior to those of others. Until the requisite standards are laid down and applied to the samples no such presumption can be made. While a particular manufacturer may claim that biological availability is a factor which is important, he cannot make any assertion that such tests were found to be satisfactory in the case of his drugs as compared with those of others in the same field of manufacture of drugs or formulations.

17.9 All the manufacturers have stated that they exercise strict and rigorous quality control on their products starting from the raw materials stage of the formulations. Out of the 34 units mentioned 22 have stated that they carry out regular quality control tests and checks at every stage of production. This is carried out in their independent quality control departments manned by trained staff which tests raw materials and intermediates and analyses and checks the final product according to the Pharmacopoial standards for purity, suitability, sterility etc. Only after the product passes through these tests it is released for sale. Some of the units have stated that they send their products to the laboratories of their collaborators for additional evaluation. A few others have stated that they send their samples to other approved laboratories for testing. Some of the replies that we have received with regard to quality control methods available to and applied by the manufacturing unit are as follows:

**A. Manufacturers of basic drugs**

1. Alembic Chemical :

Quality is controlled at several stages, before the product is released for sale. The finished product has to pass through the

Process Control Laboratory, Antibiotic Certification Laboratory and finally through Control Laboratory.

2. Atul Products :

It has three fully equipped laboratories engaged on the work of Research for Dyes Chemicals and Pharmaceuticals These laboratories are under the control of foreign trained technologists It has got a chain of laboratories each specialising in different types of work such as analysis, control of process and research etc These are (i) Analytical Lab, (ii) Investigation Lab, (iii) Intermediate Lab, (iv) Development Lab and (v) Research Laboratory

3 Biochemical and Synthetic

The raw materials, indigenous or imported, are subjected to Quality Control to meet the specifications, prior to taking over for manufacture Intermediate products are also checked and analysed The end product is also analysed and released for packing only after it complies with specifications

4 Bengal Immunity :

Tetanus Anti-toxin—The sterility test of the serum from each batch is done as per Drugs and Cosmetics Act 1940 after the bulk batch is divided into a suitable number of batches by sterile filtration The serum of the batch is then dispensed asceptically in sterile ampoules and sterility test of the serum in the ampoules in the batch is again done as laid down in Drugs and Cosmetics Act

5 Boehringer-Knoll :

It has a well-equipped control laboratory to control manufacture of its products at different stages The analyses are made by qualified and experienced staff For chemical tests and analysis many modern items of physical electronic equipment are available The standards followed are those specified by its German Associates The control laboratory checks purity of all the batches of the various intermediates before they are released as finished products It is also sampled and tested by the Control Laboratory A sample batch of every finished product is also sent to the German Associates for their evaluation and each batch is released for sale only after it has been approved by its Associates

6. Boots :

The quality of crystalline Insulin and its formulations is controlled by (a) Physical, (b) Biological, (c) Chemical and (d) Bacteriological methods. Testing of samples is done on an elaborate scale. It withdraws 100 to 225 samples from a batch depending on the size of the batch and the product. It is required to send to its associates in Britain samples of each batch of all the insulin manufactured by it for overall control of the product and packing materials.

7. Cyanamid :

Its quality control department is divided into the laboratories, namely, (i) Pharmaceutical Testing Lab. (ii) Formulation *Improcess* Testing Lab. and (iii) Insecticide Testing Lab. The pharmaceutical testing lab. consists of four major sections (i) chemical testing, (ii) packing material testing, (iii) biotesting and (iv) microlab. A finished product has to pass all these sections. The quality control lab. is equipped to conduct the majority of tests locally. There are still some tests which are carried out either by its parent organisation in U. S. A. or through some of the commercial analytical labs. in Bombay.

8. Glaxo Lab. :

It has various stages of quality control, from raw material to packing material. Sterility tests on Intermediates (where applicable) are carried out on the bulk before filling. The finished products are sampled by analytical department and subjected to physical and chemical tests. The packed stock is also examined for correct identity of contents and other labelling details. A microbiological survey of the factory area is carried out in order to determine whether aspectic conditions a adhered to or not, in order to track down and eliminate sources of contamination. The new drug is submitted for clinical trials after toxicological evaluation on animals has proved satisfactory.

9. Haffkine :

The tetanus toxin used is prepared in Toxin Section of Immunology Department and is standardised against standard tetanus Anti-toxin. Different dilutions of the anti-toxin are used with constant volume of tetanus toxin and injected sub-cutaneously into two mice of 18-20 gram weight. Standard 'Tetanus Antitoxin is also titrated each time along with the samples.

10 Hindustan Antibiotics

Every consignment of each raw material is tested by an independent laboratory for conformity with specifications

Records are maintained for each step of manufacture A schedule of in-process sampling is followed and representative samples are drawn at regular intervals during the manufacture. These samples are tested in Control Laboratory according to set procedures The intermediates are tested and only those which conform to internal standards are taken up for processing in the next stage! The final products are tested by the Quality Control Laboratory

11. May & Baker :

(i) Raw materials are tested to rigid specifications before being sent for manufacturing purposes

(ii) Analytical control measures are adopted at important stages during the manufacturing process

12 Parke-Davis

Raw materials prior to release for manufacture are tested by physical or biological order to ensure that they meet official specifications Analytical data on the basis of every batch of raw [illegible] record so that the history [illegible] through every [illegible] conducted for [illegible]

13 Sarabhai Merck

It has a fully equipped Quality Control Department with the highly qualified and specially trained technical staff for testing the products manufactured by the Company It also sends its staff from time to time to its collaborators for training in the latest [illegible] of testing [illegible] finished [illegible] informs all the departments concerned about the final disposition of the product under testing by sending a copy of the test report to each This Department keeps one sealed sample of the finished product as a retained sample The packed containers are stored in an air conditioned room

14. Standard Pharmaceuticals :

Raw materials and packing materials are sampled by the Quality Control Department and submitted to the Laboratory for testing and approval. The finished product is again sampled by Quality Control for final testing. Quality Control Inspectors of the Company also inspect the various manufacturing and packing operations in order to ensure that standard practices laid down in the operational formulae are being followed.

15. Unichem Labs. :

It has its own analytical laboratory where raw materials as well as finished products are tested before they are relased to market.

16. Wander Pharmed :

All raw materials are tested by M/s Italab. Private Ltd., Bombay and partly by its foreign collaborators. Tests on intermediates are carried out in the factory. Finished goods are again tested by Italab. on regular basis and periodically by its foreign collaborators in Switzerland.

B. **Formulators**

1. Boehringer-Knoll :

Each batch of finished product is analysed and certified by an independent testing laboratory and periodically batches are also sent to foreign collaborators for test. Quality Control of raw material and packing material is undertaken by the testing departments of loan manufacturers.

2. Boots :

Sulphadiazine tabs. and Insulin formulations are organised according to pharmacopoeial methods and in addition the tests as required by the specifications supplied by the English Company are carried out.

3. British Drug House :

Constant Quality Control steps are taken in the manufacture of products from the acceptance of raw materials to the certification of finished products. Samples taken during all phases of production are carefully analysed in continuous quality control checks.

4 Burroughs Wellcome :

Insulin.—The bulk Solution Sterilised by filteration is sampled aspectically. Various tests are carried out by their parent Company in U. K. The filled containers are statistically sampled and subjected to tests for sterility, volume filled etc Antitoxins: These are examined at [illegible] Beckenhyam (U K [illegible] The examination [illegible] otein content, [illegible] tested by its [illegible] erials conform to their standards

5 Ciba :

It follows the Standard Pharmacopoeial for testing of raw materials for the manufacture of formulation and for testing finished formulations The raw materials and finished products are also subjected to many tests ordered and prescribed by their Collaborators, CIBA Ltd, Basle. Finally it sends the samples of active substances and finished formulations to its collaborators from time to time for double check. The specified drug used for the formulations is checked for its contents, purity and suitability The formulations are assayed for their content of the specified drug.

6 Cilag-Hind :

Every raw material is analysed and taken for processing if it complies with laid down specifications The quality of semi-finished products at various stages is also checked The finished product is also tested and analysed

7. Chemical, industrial and Pharmaceutical Laboratories (CIPLA) It has a fully equipped (i) chemical control and (ii) biological control laboratories It has also obtained permission from U K Health Ministry for ten of its products to be sold there.

8 Fairdeal Corporation ·

Raw materials and auxillary items like ampoules, vials and bottles, are checked by analytical department The Injectable Department carries out the sterilisation of distilled water and finished products Distilles water plant is cleaned at every 15 days interval and the water is tested for pyrogen Toxicity tests are conducted for Liver Extract Preparation. Empty bottles for filling are thoroughly washed on semi-automatic Washing Machine

and are dried at high temperature. Checking of foreign particles is carried out against light before filling. Samples from each batch of formulations are sent to analytical Department for carrying out detailed analysis of active ingredient used in them.

9. Geoffrey Manners :

Raw materials including excipents used in the manufacture of Products are analysed. The intermediate products are also checked, e.g. tabs and granules are checked for active ingredient and liquid for pH. also. The finished products and packing materials are checked.

10. Hindustan Antibiotics :

Formulations are manufactured by taking ingredients which are properly tested both at the raw material and semi-finished stage. Products at all intermediate stages are checked for their potency and properties such as pH, moisture, extinction coefficient etc. and to ensure sterility of the rooms in which the products are manufactured by microbiological methods. Standards prescribed for internal use are very rigorous and fully satisfy the pharmacopoeial standards

11. Hoechst

Raw mterials are thoroughly analysed. An analysis at the intermediate stages is carried out in case of all preparations before they are finally processed. The final preparations are subjected to strict quality control as per the pharmacopoeial and Hoechst Standards. Ampoules, antibiotics, tablets, capsules etc. are inspected individually for the absence of foreign particles on the defective units

12. Kemp & Co. :

All raw materials are analysed and used only if they conform to the required standards. Finished products are analysed and packed into containers after conforming to required standard. During manufacture control is also kept on the disintegrating time of tablets, aseptic condition of the filling room of injections, tablets etc.

13. Mac Labs; :

It follows the recognised Standards or other Standards as advised by the Drugs Controller from time to time.

14. Neo Pharma :

Raw materials, prior to employment in the manufacture of formulations are analysed and used only if they are found upto

Standard Every batch of finished product is checked, controlled and analysed prior to packing and rejected if found defective or not upto Standard The complaints received after sales are attended to and tests carried out for Quality and Standard The batch, if any, found not complying with prescribed Standard is withdrawn from the market

15 Smith Stanistreet

Raw materials are tested in analytical Laboratories The raw materials which do not conform to the specified standards of quality are not taken up for manufacture During manufacture samples are sent from different stages for analysis These analytical results guide in the processing The results of analysis are communicated to the respective production units A few finished packs of every batch of all the preparations are kept in the Quality Control Laboratory for follow up studies

16 United Pharma

Raw materials are analysed before they are taken for manufacture After formulating the finished products are analysed to ensure the quality

17 U S Vitamin •

Every raw material is analysed and taken for processing if it complies with laid down specifications The quality of semi-finished products at various stages is also checked The finished product is also tested and analysed In addition, samples of raw materials and finished products are sent to their principals in U S A for analysis as a double check

18 Bombay Ideal Products

It is maintaining a well equipped Laboratory Standards followed are those which are recognised by the Drugs Authorities

19 Lyka Labs

It has its own Analytical Department and also a small Research Department where it carries out its tests

20 Medical Products

Quality Control is maintained through the analytical laboratories approved by the Drugs Controller

21 Lyovak Labs

Raw materials and finished products are tested in Therapeutic Chemical Research Laboratories, Bombay

22. Pharma Medico :

23. Retort Labs :

24. Binichem :

The quality control of raw materials and formulations for these three units are attended to by Italab Private Ltd., Bombay.

17.10 The Drugs and Equipment Standards Committee appointed by Government in October 1962 made a survey of sub-standard drugs. The survey covered a period of five years from 1959-60 to 1963-64 and in case of the last mentioned years upto September 1963. The State Drugs Control Authorities had reported a total of 25,767 samples which had been analysed out of which 5,264 were found to be sub-standard. Over these years the percentage of sub-standard drugs works out to 20.4 or almost one fifth of the total samples analysed. Figures for the complete year 1963-64 and the years 1964-65, 1965-66, 1966-67 and 1967-68 were also obtained subsequently from the Drugs Controller (India) and these have also been substituted for 1963-64 and added to the figures extracted from the Report of the Drugs and Equipment Standards Committee. The break-down of the categories of drugs analysed, the number of samples and those found sub-standard together with percentages are as given in Table 17.1.

TABLE 17.1

(i) *Details of samples of drugs analysed by the Drugs and Equipment Standards Committee and subsequently furnished by the Drugs Controller*

| Sl. No. | Category of drugs | Year | Total samples analysed | Total No. of samples found sub-standard or defective | Percentage |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Vitamins . . . | 1959-60 | 1121 | 414 | 36.9 |
| | | 1960-61 | 1188 | 382 | 32·2 |
| | | 1961-62 | 1004 | 261 | 26·0 |
| | | 1962-63 | 970 | 229 | 23·6 |
| | | 1963-64* | 1210 | 258 | 21·3 |
| | | 1964-65% | 1091 | 209 | 19·1 |
| | | 1965-66@ | 1250 | 196 | 15·7 |
| | | 1966-67£ (9 months) | 742 | 128 | 17·2 |
| | | Total | 8576 | 2077 | 24·2 |

TABLE 17·1—*Contd*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 2 | Hormones . | 1959-60 | 8 | 5 | 62 5 |
| | | 1960-61 | 46 | 4 | 8 7 |
| | | 1961-62 | 47 | 11 | 23 4 |
| | | 1962-63 | 57 | 8 | 14 0 |
| | | 1963-64* | 48 | 12 | 25 0 |
| | | 1964-65% | 63 | 4 | 6 3 |
| | | 1965-66@ | 70 | 4 | 5 7 |
| | | 1966-67£ (9 months) | 175 | 14 | 8 0 |
| | | TOTAL | 514 | 62 | 12 1 |
| 3 | Antibiotics | 1959-60 | 149 | 24 | 16 1 |
| | | 1960-61 | 136 | 11 | 8 1 |
| | | 1961-62 | 273 | 21 | 7 7 |
| | | 1962-63 | 319 | 28 | 8 8 |
| | | 1963-64* | 267 | 22 | 8 2 |
| | | 1964-65% | 211 | 15 | 7 1 |
| | | 1965-66@ | 670 | 38 | 5 7 |
| | | 1966-67£ (9 months) | 469 | 25 | 5 3 |
| | | TOTAL | 2494 | 184 | 7 4 |
| 4 | Insulin . . . | 1959-60 | 3 | 1 | 33 3 |
| | | 1960-61 | | | |
| | | 1961-62 | . | | |
| | | 1962-63 | 13 | 1 | 7 7 |
| | | 1963-64* | 21 | 1 | 6·2 |
| | | 1964-65% | 41 | 1 | 2 4 |
| | | 1965-66@ | 28 | 2 | 7 1 |
| | | 1966-67£ (9 months) | 24 | 2 | 8 3 |
| | | TOTAL | 130 | 8 | 6 2 |
| 5 | Biological Products . | 1959-60 | 100 | 26 | 26 0 |
| | | 1960-61 | 74 | 20 | 27 0 |
| | | 1961-62 | 95 | 21 | 22 1 |
| | | 1962-63 | 119 | 29 | 24 4 |
| | | 1963-64* | 161 | 23 | 14 3 |
| | | 1964-65% | 107 | 6 | 5 6 |
| | | 1965-66@ | 97 | 15 | 15 5 |
| | | 1966-67£ (9 months) | 164 | 30 | 18 2 |
| | | TOTAL | 917 | 170 | 18 5 |

TABLE 17·1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 6 | Chemotherapeutics . | 1959-60 | 309 | 48 | 15·5 |
| | | 1960-61 | 369 | 59 | 16·0 |
| | | 1961-62 | 389 | 52 | 13·4 |
| | | 1962-63 | 124 | 24 | 19·4 |
| | | 1963-64* | 191 | 28 | 14·7 |
| | | 1964-65% | 239 | 34 | 14·2 |
| | | 1965-66@ | 296 | 36 | 12·2 |
| | | 1966-67£ (9 months) | 367 | 38 | 10·4 |
| | | TOTAL | 2284 | 319 | 14·0 |
| 7 | Galenicals . . | 1959-60 | 1008 | 176 | 17·5 |
| | | 1960-61 | 1179 | 128 | 10·9 |
| | | 1961-62 | 921 | 85 | 9·2 |
| | | 1962-63 | 1134 | 124 | 10·9 |
| | | 1963-64* | 1002 | 81 | 8·1 |
| | | 1964-65% | 286 | 56 | 19·6 |
| | | 1965-66@ | 260 | 49 | 18·8 |
| | | 19666-67£ (9 months) | 515 | 39 | 7·6 |
| | | TOTAL | 6305 | 738 | 11·7 |
| 8 | Other Misc. Drugs . | 1959-60 | 2162 | 397 | 18·4 |
| | | 1960-61 | 2298 | 436 | 19·0 |
| | | 1961-62 | 2376 | 478 | 20·1 |
| | | 1962-63 | 2418 | 884 | 36·6 |
| | | 1963-64* | 2640 | 591 | 22·4 |
| | | 1964-65 | 2184 | 452 | 20·7 |
| | | 1965-66 | 2332 | 440 | 18·9 |
| | | 1966-67 (9 months) | 2438 | 425 | 17·4 |
| | | TOTAL | 18848 | 4103 | 21·8 |

* Excluding the States of Kerala and Uttar Pradesh.

% Do Bihar, Punjab and Uttar Pradesh.

@ Do Andhra Pradesh, Bihar, Punjab, Uttar Pradesh, Manipur.

£ Do Haryana, Kerala, Punjab, Rajasthan, Uttar Pradesh. Himachal Pardesh and Manipur.

TABLE 17·1—*Concld.*

(ii) *Summary for the period* 1959-60 *to* 1967-68.

| Sl No | Category of Drugs | Total samples Analysed | Total samples found sub-standard | Percentage |
|---|---|---|---|---|
| 1 | Vitamins . . . | 8576 | 2077 | 24 2 |
| 2 | Hormones . . | 514 | 62 | 12 1 |
| 3 | Antibiotics | 2494 | 184 | 7 4 |
| 4 | Insulin . . | 130 | 8 | 6 2 |
| 5 | Biological Products . . . | 917 | 170 | 18 5 |
| 6 | Chemotherapeutics . . | 2284 | 319 | 14 0 |
| 7 | Galenicals . . | 6305 | 738 | 11 7 |
| 8 | Other Misc Drugs | 18848 | 4103 | 21 8 |
| | GRAND TOTAL | 40068 | 7661 | 19 1 |

17.11. The State-wise break-down of the above data is as follows:—

TABLE 17 2

(i) *State-wise details of drugs analysed and found sub-standard*

| Sl No | State | Year | Total No of samples analysed | Total No of samples found sub-standard | Percentage |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Andhra Pradesh . . | 1959-60 | | | . |
| | | 1960-61 | | | |
| | | 1961 62 | | . | |
| | | 1962 63 | 61 | 27 | 44 3 |
| | | 1963 64 | 34 | 9 | 26 7 |
| | | 1964 65 | 101 | 37 | 36 6 |
| | | 1965 66 | | — | .. |
| | | 1966-67 | 294 | 52 | 17 7 |
| | | TOTAL | 490 | 125 | 25 5 |

TABLE 17·2—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 2 | Assam . . . . | 1959-60 | 1 | 1 | 100 |
| | | 1960-61 | .. | .. | .. |
| | | 1961-62 | 6 | 5 | 83·3 |
| | | 1962-63 | 20 | 7 | 35·0 |
| | | 1963-64 | 27 | 9 | 33·3 |
| | | 1964-65 | 4 | 1 | 25·0 |
| | | 1965-66 | 37 | 11 | 29·7 |
| | | 1966-67 | 46 | 13 | 28·3 |
| | TOTAL . | | 141 | 47 | 33·3 |
| 3 | Bihar . . . . | 1959-60 | 120 | 20 | 16·7 |
| | | 1960-61 | 30 | 23 | 76·7 |
| | | 1961-62 | .. | .. | .. |
| | | 1962-63 | .. | .. | .. |
| | | 1963-64 | 76 | 17 | 22·4 |
| | | 1964-65 | .. | .. | .. |
| | | 1965-66 | .. | .. | .. |
| | | 1966-67 | .. | .. | .. |
| | TOTAL . | | 226 | 60 | 26·5 |
| 4 | Bombay (Maharashtra) . | 1959-60 | 2346 | 725 | 30·9 |
| | | 1960-61 | 1847 | 421 | 22·8 |
| | | 1961-62 | 1744 | 317 | 18·1 |
| | | 1962-63 | 1839 | 600 | 32·6 |
| | | 1963-64 | 1807 | 308 | 17·0 |
| | | 1964-65 | 1858 | 294 | 15·8 |
| | | 1965-66 | 1789 | 223 | 12·5 |
| | | 1966-67 | 1438 | 138 | 9·6 |
| | TOTAL . | | 14668 | 3026 | 20·6 |
| 5 | Gujarat . . . . | 1959-60 | .. | .. | .. |
| | | 1960-61 | 661 | 204 | 30·9 |
| | | 1961-62 | 915 | 237 | 25·9 |
| | | 1962-63 | 847 | 220 | 26·0 |
| | | 1963-64 | 804 | 101 | 22·5 |
| | | 1964-65 | 919 | 157 | 17·1 |
| | | 1965-66 | 1363 | 229 | 16·8 |
| | | 1966-67 | 1291 | 221 | 17·1 |
| | TOTAL . | | 6800 | 1449 | 21·3 |

TABLE 17 2—*Contd*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 6 Kerala | | 1959 60 | 3 | 2 | 66 6 |
| | | 1960 61 | 7 | 4 | 57 1 |
| | | 1961 62 | 26 | 7 | 26 9 |
| | | 1962 63 | 97 | 19 | 19 6 |
| | | 1963 64 | | | |
| | | 1964 65 | 168 | 39 | 23 2 |
| | | 1965 66 | 208 | 37 | 17 8 |
| | | 1966-67 | | | |
| | TOTAL | | 509 | 108 | 21 2 |
| 7 M P | | 1959-60 | 63 | 20 | 31 7 |
| | | 1960-61 | 201 | 72 | 35 8 |
| | | 1961 62 | 190 | 33 | 17 3 |
| | | 1962 63 | 101 | 15 | 14 9 |
| | | 1963 64 | 135 | 44 | 32 6 |
| | | 1964 65 | 98 | 29 | 29 6 |
| | | 1965-66 | 221 | 65 | 29 4 |
| | | 1966-67 | 209 | 59 | 28 2 |
| | TOTAL | | 1218 | 337 | 27 8 |
| 8 Madras | | 1959-60 | 228 | 65 | 28 5 |
| | | 1960-61 | 169 | 27 | 16 0 |
| | | 1961 62 | 169 | 57 | 33 7 |
| | | 1962 63 | 433 | 126 | 29 1 |
| | | 1963-64 | 293 | 79 | 27 0 |
| | | 1964 65 | 321 | 49 | 15 3 |
| | | 1965-66 | 554 | 44 | 7 9 |
| | | 1966 67 | 460 | 58 | 12 6 |
| | TOTAL | | 2627 | 505 | 19 2 |
| 9 Mysore | . | 1959 60 | 7 | 2 | 28 6 |
| | | 1960-61 | 8 | 22 | 25 3 |
| | | 1961 62 | 264 | 41 | 15 5 |
| | | 1962 63 | 283 | 86 | 30 4 |
| | | 1963 64 | 278 | 62 | 22 3 |
| | | 1964-65 | 335 | 81 | 24 2 |
| | | 1965 66 | 354 | 75 | 21 2 |
| | | 1966-67 | 701 | 80 | 11 4 |
| | TOTAL | | 2309 | 449 | 19 5 |

TABLE 17·2—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 10 | Orissa . . . . | 1959-60 | 5 | 3 | 60·0 |
| | | 1960-61 | 4 | 2 | 50·0 |
| | | 1961-62 | 7 | 2 | 28·6 |
| | | 1962-63 | 50 | 20 | 40·0 |
| | | 1963-64 | 79 | 32 | 40·5 |
| | | 1964-65 | 51 | 22 | 43·1 |
| | | 1965-66 | 48 | 20 | 41·7 |
| | | 1966-67 | 95 | 45 | 47·4 |
| | TOTAL . | | 339 | 146 | 43·1 |
| 11 | Punjab . . . . | 1959-60 | 1271 | 94 | 7·4 |
| | | 1960-61 | 1211 | 103 | 8·5 |
| | | 1961-62 | 840 | 63 | 7·5 |
| | | 1962-63 | 1044 | 74 | 7.1 |
| | | 1963-64 | 1639 | 206 | 12·6 |
| | | 1964-65 | .. | .. | .. |
| | | 1965-66 | .. | .. | .. |
| | | 1966-67 | .. | .. | .. |
| | TOTAL . | | 6005 | 540 | 9·0 |
| 12 | Rajasthan . . . | 1959-60 | .. | .. | .. |
| | | 1960-61 | 82 | 3 | 3·6 |
| | | 1961-62 | 65 | 6 | 9·2 |
| | | 1962-63 | 104 | 50 | 48·1 |
| | | 1963-64 | 97 | 14 | 14·4 |
| | | 1964-65 | 50 | 10 | 20·0 |
| | | 1965-66 | 19 | 8 | 42·1 |
| | | 1966-67 | .. | .. | .. |
| | TOTAL . | | 417 | 91 | 21·8 |
| 13 | Uttar Pradesh . . | 1959-60 | 453 | 57 | 12·6 |
| | | 1960-61 | 619 | 78 | 12·6 |
| | | 1961-62 | 635 | 87 | 13·7 |
| | | 1962-63 | .. | .. | .. |
| | | 1963-64 | .. | .. | .. |
| | | 1964-65 | .. | .. | .. |
| | | 1965-66 | .. | .. | .. |
| | | 1966-67 | .. | .. | .. |
| | TOTAL . | | 1707 | 222 | 13·0 |

TABLE 17 2—*Contd*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 14 | West Bengal | 1959 60 | 75 | 26 | 34 7 |
| | | 1960-61 | 80 | 16 | 20 0 |
| | | 1961 62 | 52 | 26 | 50 0 |
| | | 1962-63 | 71 | 10 | 14 1 |
| | | 1963 64 | 91 | 19 | 20 9 |
| | | 1964-65 | 109 | 19 | 17 4 |
| | | 1965-66 | 162 | 15 | 9 3 |
| | | 1966 67 | 258 | 20 | 7 8 |
| | | TOTAL | 898 | 151 | 16 8 |
| 15 | Delhi | 1959-60 | 288 | 76 | 26 4 |
| | | 1960-61 | 292 | 65 | 22 3 |
| | | 1961-62 | 192 | 48 | 25 0 |
| | | 1962-63 | 189 | 72 | 38 1 |
| | | 1963-64 | 180 | 36 | 20 0 |
| | | 1964-65 | 206 | 38 | 18 4 |
| | | 1965-66 | 247 | 53 | 21 5 |
| | | 1966-67 | 94 | 12 | 12 7 |
| | | TOTAL | 1688 | 400 | 23 7 |
| 16 | H P | 1959 60 | | | |
| | | 1960-61 | | | |
| | | 1961-62 | . | | |
| | | 1962-63 | 2 | Nil | . |
| | | 1963-64 | — | — | |
| | | 1964-65 | — | — | — |
| | | 1965-66 | — | — | |
| | | 1966-67 | — | — | .. |
| | | TOTAL | 2 | Nil | Nil |
| 17 | Manipur | 1959 60 | | | |
| | | 1960 61 | | | |
| | | 1961 62 | | | |
| | | 1962 63 | 4 | 1 | 25 0 |
| | | 1963-64 | .. | | |
| | | 1964 65 | | | . |
| | | 1965 66 | | .. | — |
| | | 1966-67 | | . | — |
| | | 1967-68 | .. | — | |
| | | TOTAL | 4 | 1 | 25 0 |

TABLE 17·2—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 18 | Tripura . . . | 1959-60 | .. | .. | .. |
| | | 1960-61 | .. | .. | .. |
| | | 1961-62 | .. | .. | .. |
| | | 1962-63 | 8 | Nil | .. |
| | | 1963-64 | .. | .. | .. |
| | | 1964-65 | .. | — | ... |
| | | 1965-66 | — | — | .. |
| | | 1966-67 | .. | .. | .. |
| | | TOTAL | 8 | Nil | .. |
| 19 | Goa . . . . | 1964-65 | 2 | 1 | 50·0 |
| | | 1965-66 | 1 | Nil | .. |
| | | 1966-67 | .. | .. | .. |
| | | TOTAL | 3 | 1 | 33·3 |
| 20 | Pondicherry . . . | 1964-65 | .. | .. | .. |
| | | 1965-66 | — | — | — |
| | | 1966-67 | 9 | 3 | 33·3 |
| | | TOTAL | 9 | 3 | 33·3 |

(ii) *Summary for the period* 1959-60 *to* 1966-67

| Sl. No. | State | Total No. of samples analysed | Total No. of samples found defective | Percentage |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| 1 | Andhra Pradesh . . . . | 490 | 125 | 25·5 |
| 2 | Assam . . . . . . | 141 | 47 | 33·3 |
| 3 | Bihar . . . . . . | 226 | 60 | 26·5 |
| 4 | Maharashtra (Bombay) . . | 14,668 | 3,026 | 20·6 |
| 5 | Gujarat . . . . . . | 6,800 | 1,449 | 21·3 |
| 6 | Kerala . . . . . . | 509 | 108 | 21·2 |
| 7 | Madhya Pradesh . . . . | 1218 | 337 | 27·8 |
| 8 | Madras . . . . . . | 2627 | 505 | 19·2 |

TABLE 17·2—*Concld.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 9 | Mysore . | 2309 | 449 | 19 5 |
| 10 | Orissa | 339 | 146 | 43 1 |
| 11 | Punjab | 6005 | 540 | 9 0 |
| 12 | Rajasthan | 417 | 91 | 21 8 |
| 13 | West Punjab . | 1707 | 222 | 13 0 |
| 14 | West Bengal . . | 898 | 151 | 16 8 |
| 15 | Delhi . . . | 1688 | 400 | 23 7 |
| 16 | Himachal Pradesh . | 2 | — | |
| 17 | Manipur . . . | 4 | 1 | 25·0 |
| 18 | Tripura | 8 | . | |
| 19 | Goa | 3 | 1 | 33 3 |
| 20 | Pondicherry | 9 | 3 | 33 3 |
| | GRAND TOTAL . | 40068 | 7661 | 19 1 |

17 12 In so far as the data furnished by the Drugs Controller (India) is concerned it is not complete as all the States have not reported Efforts were made to find out the extent to which the sub-standard drugs were detected in the case of large scale units as compared to those for all the small scale units but no such classification was available. It was also not possible to find out how many of these sub standard drugs were sold by the generic names and how many by brand names

17 13 The percentages of sub-standard drugs detected over these years give cause for a certain degree of alarm The overall percentages during these years work out to 19 1 for sub standard drugs and for individual years these were as follows —

| | |
|---|---|
| 1959-60 | 20 2 |
| 1960-61 | 19 4 |
| 1961 62 | 17 2 |
| 1962 63 | 28 8 |
| 1963-64 | 18 3 |
| 1964-65 | 18 4 |
| 1965-66 | 15 6 |
| 1966-67 . | 14 3 |
| 1967-68 (9 months) . | 14 5 |

The number of samples analysed during these years has been within the range of 4,222 (1964-65) and 5,540 (1963-64). With the increase in the turn-over from about Rs. 70 crores in 1959-60 to Rs. 190 crores in 1967 the number of samples analysed has instead of going up come down. In order to have a more correct picture of the extent to which substandard drugs are being produced in the country it would be desirable to have analyses separately for generic as well as brand name products and also by units in the large scale as well as in the small scale sectors.

## CHAPTER 18

## RESEARCH AND DEVELOPMENT

18 1. The administration of *medicine for the alleviation* of human suffering from disease was according to age old practice based on well tried medicaments which had proved the test of time over centuries Both Western as well as Eastern systems of medicine until the beginning of the century relied upon the findings of ancient physicians and even if current experiments pointed any path for departure practitioners of medicine were cautious in taking it Today the position is reversed No manufacturing unit can hope to survive until it can discover newer and more effective drugs *The progress made during the last 33 years in* the field of therapeutic medicine by the discovery of sulphanamides, antibiotics and sedatives has nevertheless touched only the fringe of the total pathology to which the human body is prey A very broad field for vast discoveries has therefore become open to mankind For the drug industry has only recently moved from the stage of compounding of herbs, phytochemicals and a few animal products to the harnessing of synthetic chemicals for finding re- [illegible] oying certain organisms [illegible] any *lasting injury to the* [illegible] g if it is effective in the [illegible] the tissues in which the [illegible] research in drugs is therefore concentrated on the discovery of such drugs which may destroy the harmful organisms and yet have the least deleterious effect on the human bio chemical mechanism

18 2 The question is sometimes asked why research is more important for the pharmaceutical industry than for other indus- [illegible]

ar [illegible] and a large num- [illegible] e, it is said, the use of [illegible] ng the expectation of life of the average citizen [illegible] ance of the continuance of war on disease it is essential to find newer and more potent drug for which relentless and intensive research *is* neces sary Such research can be conducted only by organisations which

are equipped with the necessary laboratories and animal houses and command the services of a host of research workers. Owing to the involvement of workers from different scientific disciplines and the need for diverse and costly equipment and accommodation heavy outlays are occasioned. None of the leading drugs which are in use to-day existed thirty years ago and those which were in use before 1935 have a minimum medicinal utility to-day. It is not possible therefore to rely only on what has been done in the brief span of 30 or 33 years. We may be on the threshold of great therapeutic discoveries and intensive but wide ranging activity has to be maintained to conserve human life and to combat the myraid varieties of disease that attack the human organism.

18.3.1. The organisms which cause disease in man, may, broadly speaking, be divided into five main groups, namely, viruses, bacteria, fungi, protoza and helminths. In historical times when scientific investigation had not been established, human beings were likely to have been used for the purpose of experimentation on purely selective principles. With the level of social consciousness that exists today it is neither moral nor legal to do so and the basic experiments have therefore to be made over a long period and in countless number of other organisms. Anti-biological activities are studied on exprimentally infected animals. Anti-bacterial, anti-fungal and anti-protozal activities can be detected in chemical laboratory test tubes and with greater certainty on experimentally infected animals. But for certain protozoa such as malarial parasites, even this is not possible. Anti-malarial drugs have therefore to be administered to animals and birds experimentally infected with parasites similar to human malarial parasites. Evolving a new medicine is therefore a highly organised work of a team of scientists who have to follow a specific programme over a number of years. The research team has to consist of persons who are qualified in the fields of chemistry, physical chemistry, bio-chemistry, pharmacology, physiology, pathology, pharmacy, endocrinology, microbiology, bacteriology, virology, parasitology and botany. Any biologically active substance must have toxic properties. Otherwise it would not be effective against pathogens which cause disease. Therefore, with the help of thousands of experiments, it is necessary to discover such compounds which may be effective in the case of a certain disease but may not have any adverse pharmacological action on the host tissue or organism. By and large the majority of the experiments are made on animals but that is not the end. After discovery the drug has to be carefully and in measured doses administered to human beings in order to discover any adverse side effects which it may not have been possible to ascertain in the case of animal tests. In certain cases drugs which

were found effective in animal tests resulted in causing violent headache, nausea and noise in ears when administered to human patients It is possible that the same reactions may have occurred in the case of the animals too but could not be ascertained owing to lack of communication of such subjective experiences There are more than fifty known pharmacological actions and many of these are difficult to investigate At the initial stage the object of screening is to reject useless material as soon as possible It has been found that sometimes a single drug requires screening of between 3 000 to 4,000 new substances or compounds and the conduct of 30 to 40 thousand biological tests Of the total number of compounds synthesised, about 30 to 40 may show some promise for further study and after intensive toxicity tests only three to four may be suitable for further clinical trials on humans and of them finally one may or may not prove good enough to be marketed Screening is therefore a tedious time consuming and expensive process There are no other short cuts

18 3 2 It has been accepted on all sides that research is the main means of survival in the highly competitive business of the manufacture of drugs It is all the more essential for maintaining any sizeable export market While research made elsewhere can be purchased for the requirement of the domestic market, existence of substitute competition in this industry makes it necessary to rely on innovation for the success in the export market

18 4 In other fields of economic endeavour, research is not directly concerned with human life but with artifacts or commodities and no elaborate precautions are required before putting out a product in the market since no risks to human life are involved But drugs concern human life and its safety and a great deal of preparation has to be made before launching a new therapeutic agent for combating disease

18 5 It is said sometime that there is not enough justification for the heavy outlays made by individual drug manufacturing companies on research and that a great deal of the effort results in waste *It is argued that research often undertaken with little* therapeutic justification is exceptionally risky succeeds only in producing a small proportion of substances tested and these are likely to be superseded even before the research expenditure has been recovered Research outlays are usually so large that a number of undesirable practices have to be resorted to recover them by such means as brand names patients and promotion and therefore the industry seeks inordinately heavy profits on the

pretext of having to make up for outlays on research. It is at times said that the industry concentrates its effort on finding a new drug whereas the need is for fundamental biological and bio-chemical research to discover the secrets of nature and of disease, that firms devote much of their time to developing variations with the existing drugs which may have no greater efficacy. With the motive being profit and the promotion of sales of new medicines, companies prematurely launch their discoveries in disregard of the safety or efficacy of the drugs.

18.6. It is suggested that research should more successfully and cheaply be conducted jointly by a number of units in the industry or by academic institutions given adequate funds. This matter has been debated for some time and divergent views have been expressed. As regards joint research the discovery of new drugs is tne only sustaining factor for the company and no unit can afford to share its discoveries with others or make common cause of its inventions. It is beyond the limits of possibility to attempt to have joint schemes of applied research to be utilised by individual units.

18.7. As to research being conducted by academic institutions the position today is that academic research is oriented towards increase of the fund of basic knowledge while commercial research has more specific purposes in view such as location of disease areas where there is no effective treatment or there is scope of improving the treatment. In the process of researches for such specific purposes the research team may come upon discoveries which may further fundamental knowledge also. On the other hand it is very unlikely that in the course of research into basic principles effective the rapeutic agents may be discovered without conducting elaborate experiments on animals or in the laboratory. Nevertheless academic research is some times the base from which research into therapeutic agents is launched. Screening of chemicals is very expensive and involves a long process and cannot be undertaken unless there is a definite goal orientation for a specific purpose. An academic institution would need a very large staff indeed and very specific goals sometimes almost similar to those of commercial organisations in order to achieve results aimed by drug manufacturers. It has been aruged that even in the case of the largest academic or government financed laboratories it is not possible to harness the resources of men and material which are available to large industrial research laboratories for specific purposes such as screening for large scale pharmacological testing or the syntheses of a vast number of analogues with the aim of improving one or the other of the property of a drug. The academic laboratory is designed to break new ground for a better understanding of the

laws of nature and lays the basis for eventual industrial exploitation of scientific discoveries which emanate from its work The two fields of research are therefore complementary and not mutually exclusive But these are not interchangeable

18 8 It is estimated that all over the world the drug industry spends from Rs 350 crores to Rs 100 crores a year on research and development Some of the leading drug manufacturing countries in the world spent the following amounts in one of the recent years

| Country | Year | Amount (in crores of Rs ) | Percentage of sales turnover |
|---|---|---|---|
| U S A | 1966 | 267 | 11 |
| Japan | 1965 | 36 | 5 |
| U K | 1965 | 22 | 11 |
| Switzerland | 1965 | 36 | 10 |

Over the last ten years preceding 1964 research expenditure in U S A increased by 205 per cent while sales went up by 70 per cent only During the same period every new drug marketed had to carry in its pricing policy about Rupees three crores in research and development Between the years 1963 and 1965 expenditure rose by about Rupees 8 3 crores in U K and registered an increase of 33 per cent

In the period of 1940 66 the new single chemical entities introduced by the following countries are mentioned against each

| Country of origin | No of products solely national origin |
|---|---|
| 1 | 2 |
| United States | 505 |
| Switzerland | 54 |
| Germany | 39 |
| United Kingdom | 36 |

| 1 | 2 |
|---|---|
| France . . . . . . . . | 22 |
| Denmark . . . . . . . . | 11 |
| Mexico . . . . . . . . | 9 |
| Holland . . . . . . . | 9 |
| Sweden . . . . . . . . | 8 |
| Belgium . . . . . . . . | 6 |
| Japan . . . . . . . . | 6 |
| Austria . . . . . . . | 3 |
| Canada . . . . . . . | 3 |
| Hungary . . . . . . . | 2 |
| Czechoslovakia . . . . . . . | 1 |
| Europe . . . . . . . | 1 |
| Argentina . . . . . . . | 1 |
| Australia . . . . . . . . | 1 |
| India . . . . . . . . | 1 |
| Italy . . . . . . . . | 1 |
| TOTAL . . . | 719 |

18.9. In U. S. A. there are three companies with budgets of more than Rs. 18 crores a year on research and five more companies which spend between Rs. 9 and 18 crores a year. In U. K. one company namely, Burroughs Wellcome spends about Rupees five crores a year on research and two others namely Glaxo and Beecham each spend Rs. 2.7 crores annually. It is claimed that a staff of between 800 and 1,000 research employees is about the largest which can be effectively controlled in one establishment.

18.10. A basic research unit must have a certain minimum size below which it is likely to be ineffective. For there are many scientific disciplines which are involved and a minimum complement of representatives from each is necessary. A fairly large capital investment is also required. It has been estimated that no company can have a substantial stake in a particular field of pharmaceutical research with less than about two crores of rupees a year and even on a modest scale Rs. 15 to Rs. 20 lakhs are needed by the smallest of research units. The Indian Chemical Manufacturers' Organisation has stated that the lack of initiative in investing in fundamental research is due to lack of economic incentive afforded to such an activity. In its view pharmaceutical research needs not only a very considerable expenditure over a long period over which

it has to be recovered and unless measures for tax relief are introduced or adequacy of profits is assured there would be disinclination to undertaking research It has been suggested that Government should provide suitable incentives for investment in research The Indian Pharmaceutical industry relies mostly on the results of basic research carried out by the major drug companies abroad through collaboration agreements or licensing

18 11 From the replies received we find that there are only 11 units in India which have made an outlay of more than rupees one lakh annually on research Particulars of these units together with those of the unit which spends the largest amount on research in the descending order of the outlay made in the year 1966-67 are as follows :

TABLE 18.1

*Expenditure on Research and Development*

| | Name of the Unit | Expenditure on Research (Lakh Rs) | Total Turnover (Lakh Rs) | Percentage (%) |
|---|---|---|---|---|
| 1 | Ciba | 59 58 | 991 | 6 0 |
| 2 | Alembic Chemical | 21 67 | 627 | 3 5 |
| 3 | Hindustan Antibiotics | 16 85 | 717 | 2 4 |
| 4 | Pfizer | 7 10 | 1270 | 0 56 |
| 5 | Glaxo Labs | 4 26 | 1645 | 0 26 |
| 6 | East India Pharmaceutical | 3 75 | 263 | 1 4 |
| 7 | Cynamid | 3 32 | 504 | 0 66 |
| 8 | Bengal Immunity | 3 20 | 224 | 1 42 |
| 9 | Sarabhai Merck | 1 83 | 233 | 0 79 |
| 10 | Chemo-Pharma | 1 20 | 69 | 1 7 |
| 11 | Bio-chemical and Synthetic | 0 24 | 7 | 3 4 |
| | | 123 00 | 6553 | 1 9 |

By Western standards of outlay on research the amounts spent are almost insignificant and there is only one unit which makes a reasonable outlay

18.12. The Central Drug Research Institute of Lucknows the Regional Research Laboratory, Jammu, The Central Medical Plants Organisation, The National Chemical Laboratory, Poona and the Regional Research Laboratory at Hyderabad are some of the research institutes financed by the Government. The annual outlay of the Central Drug Research Institute was Rs. 45.02 lakhs (actual expenditure) for the year 1967-68 and Rs. 48.73 lakhs (estimated expenditure) for the year 1968-69. Similar figures for the Regional Research Laboratory, Jammu are Rs. 35.90 lakhs and Rs. 35.94 lakhs respectively. Separate figures for research on drugs in respect of the National Chemical Laboratory are not available. But, the overall expenditure for all activities is Rs. 69.2 lakhs for 1967-68 and Rs. 79.9 lakhs (estimated) for 1968-69. Similar data for the other Institutions are not available.

18.13. No significant research activity in the pharmaceutical field by any of the universities or academic institutions could be ascertained. Research activity has been so insignificant in our country that very few drugs have been included in the Pharmacopoeia on the basis of researches conducted exclusively within the country. The Hindustan Antibiotics has produced four new Antibiotics, Hemycin, Dermostatin, Aureofungin and Antiomoebin. The first two are fungicides against human diseases. They have been leased to Sherman Laboratories of U. S. A. for exploitation in U. S. A., Canada, Latin America, South America, Australia and Japan. The third item is useful against plant diseases caused by fungi. It will replace synthetic fungicides based on copper, a scarce metal, and protect grapes, rice, potato and several other cash crops. The last drug is an antibiotic having antiprotozoal and antihelminitic properties and is both for men and animals. It has been leased to another American firm, Upjohn of U. S. A. for exploitation in the world market.

18.14. The final question which arises in this connection is what facilities and allowances need to be given for the conduct of research and in what manner? It has been stated by the OPPI that much of the research is abortive but must nevertheless be paid for. Some products of research have their limited market with a price that would never cover the cost of research of these drugs. Research, in the view of the organisation, can only be financed from the profits and the primary objective must be to earn sufficient profits in the business as a whole each year to sustain a research programme which on a long term basis without being subject to the changing fortunes of the companies' activities. The Organisation has quoted in support of its contention views of

economists expressed elsewhere It has, for instance, mentioned that according to one view research outlays should be regarded as akin to debenture capital constituting a prior charge on any surplus profit A research oriented firm depends on its innovational *output for its very existence and once a certain* level has been reached there is no choice left but to increase the activity According to another view, research outlay should be considered not as incidental overheads to be written off against revenue but as capital investment in the same way as investment in building and grants

18 15 On behalf of units which have a major capital participation of foreign based companies, it was argued that part of the profits transmitted to the principals was utilised for financing research activities of these organisations which resulted in the discovery of new drugs It was therefore argued that while there was no research activity conducted in the subsidiaries within this country, *the parent organisations were making large outlays on research which had to be provided for There was no other means* for doing so except by meeting it from profits They have allocated their rate of ret [illegible] research by the parent [illegible] d be observed that in seven out of [illegible] 18 1 the expenditure on research is less than 2 per cent of the turnover It cannot also be assumed that this small outlay is adequate to *maintain these units in business* In so far as the units operating in India are concerned, these could be classified into the following categories

(1) *Units making outlay on research*

(i) With research based in India,

(ii) With the research based *outside the country* where the principals make outlay and meet the cost partly from the profits of the subsidiaries, and

(2) Units not making any outlay on research but having collaboration agreements or licences for exploitation of patents held *by others*

In so far as units falling under category (2) are concerned the licence fees or fees paid towards collaboration agreements would be included in the costs As regards *units falling* under category (1) (i) are concerned, in this case also the relative expenditure on research would equitably be allocated to the cost of drugs

In the case of units coming under category (1) (*ii*) *that* is, those units which have set up subsidiaries or major capital participation firms in India, there is room for argument as to if and what provision should be for their research activities which are based abroad. It is however not possible for us to determine the quantum of expense if any, which should be allocated to the activity of the firm in India, and the question of any addition to the cost on this account does not arise.

## CHAPTER 19

## DUTIES AND OTHER GOVERNMENT LEVIES

### 19.1. Import duty :

19 1.1. Drugs and medicines are assessed to Customs duty under the General Item No 28 of the First Schedule of the Indian Tariff Act, 1934, commonly called, the Indian Customs Tariff Schedule. This item covers chemicals, drugs and medicines of all sorts not otherwise specified The rates of duty are 60 per cent *ad valorem* standard and 50 per cent *ad valorem* preferential, while under Notification No 104 Customs dated 6th June, 1966, the effective rates have been reduced to 50 per cent *ad valorem* standard and 40% *ad valorem* preferential Under separate notifications certain drugs falling under this item are allowed to be imported at concessional rates of duty as indicated in Table 19.1 .—

TABLE 19.1

*Concessional rates of duty on drugs*

| Name of the article | Concessional rates of duty | Number of relevant Notification (Customs) of Govt of India |
|---|---|---|
| 1 | 2 | 3 |
| Crude Aureomycin . . | 20 per cent *ad-valorem* (Standard) and 10 per cent *ad valorem* (preferential) | 81 of 1957 read with 105 of 1966 |
| Crude Penicillin . . . | Same duty as under Item No 28(26) for Penicillin in bulk | 35 of 1954 |
| Mixtures of two or more sulpha drugs and combinations of sulpha drugs and antibiotics, in any form free from other therapeutic ingradients | 27½ per cent *ad valorem* (Standard) and 17½ per cent *ad valorem* (Preferential) | 19 of 1964 read with 26 of 1963 and 105 of 1966 |

TABLE 19:1—*Contd.*

| 1 | 2 | 3 |
|---|---|---|
| Mixture of two or more antibiotics in any form free from other therapeutic ingredients. | 27½ per cent *ad valorem* (Standard) 17½ per cent *ad-valorem* (Preferential). | 168 of 1954 read with 40 of 1957, 26 of 1963 and 105 of 1966. |
| Crude vitamin B. 12 . . . | 20 per cent *ad valorem* (Standard) 10 per cent *ac valorem* (Preferential) | 24 of 1960 read with 80 of 1963, 171 of 1963 and 105 of 1966. |
| Amodiaquin Hydrochloride . | 27½ per cent *ad valorem* (Standard) 17½ per cent *ad valorem* (Preferential). | 124 of 1965 read with 105. 188 and 204 of 1966. |

Patent or proprictary medicines not containing alcohol, opium, Indian hemp or other narcotic drugs are assessed to duty under item No. 28 A of I. C. T. Schedule. The rates of duty are 60 per cent *ad valorem* (Standard)and 50 per cent *ad valorem* (Preferential).

19.1.2. The same rates as for basic drugs apply to drugs and medicines under brand names. These have been referred to as "Patent or Proprietory medicines" and have been defined as "any drug or medicinal preparation, in whatever form, for use in the internal or external treatment of, or for the prevention of ailments in, human being or animals, which bears either on itself or on its container or both, a name which is not specified in a monograph in Pharmacopoeia, Formulary or other publication notified in this behalf by the Central Government in the Official Gazette, or which is a brand name, that is a name or a registered trade mark under the Trade and Merchandise Marks Act, 1958 (43 of 1958), or any other mark such as symbol, monogram, label, signature or invented words or any writing which is used in relation to that medicine for the purpose of indicating or so as to indicate a connection in the course of trade between the medicine and some person having the right either as proprietor or otherwise to use the name or mark with or without any indication indicating of the identity of that persons."

19.1.3. Drugs and medicines falling under other items of Indian Customs Tariff are subject to the rates given in Table 19.2.

TABLE 19.2

*Rates of import duty on drugs and medicines falling under items other than 28 (I. C T)*

| Item No | Drug | Rate of duty | Remarks |
|---|---|---|---|
| 28(26) | A Penicillin in bulk | 60 per cent *ad valorem* (Standard) 54 per cent *ad valorem* (Preferential) | Concessional rates under Notification No 117 Customs of 1965 are 26 per cent *ad valorem* (Standard) and 20% *ad valorem* (Preferential) |
| 28(26) | A Penicillin and its products not otherwise specified | 60 per cent *ad valorem* 54 per cent *ad valorem* (Preferential) | Concessional rates under Notification No 117 Customs of 1965 are 30 per cent *ad valorem* (Standard) and 24 per cent *ad valorem* (Preferential) |
| 28(27) | Antibiotics, such as Streptomycin, gramicidin, tyrocidine and tyrothricin and preparations which contain only one antibiotic and are free from other therapeutic ingredients but not including penicillin bulk and penicillin and its products specified in Items Nos 28(26) and 28(26A) | 60 per cent *ad valorem* (Standard) and 54 per cent *ad valorem* (Preferential) | Concessional rates under Notification No 117 Customs of 1965 are 20 per cent *ad valorem* (Standard) and 14 per cent *ad valorem* (Preferential) |
| 28(28) | (a) Sulpha drugs and preparations which contain only one sulpha drug and are free from other therapeutic ingredients | 60 per cent *ad valorem* (Standard) and 54 per cent *ad valorem* (Preferential) | Do |
| 28(28) | (A) Vitamins and vitamin preparations excluding fish liver oil free from other therapeutic ingredients | 60 per cent *ad valorem* (Standard) 54 per cent *ad valorem* (Preferential) | Concessional rate under Notification No 98-Customs of 1968 are 20 per cent *ad valorem* (Standard) and 17 per cent *ad valorem* (Preferential) |

TABLE 19.2—*Contd.*

| 1 | 2 |
|---|---|
| The following are GATT irmes: | |
| (i) Penicillin in bulk . . . . | [ I. C. T. item No. 28(26) ] |
| (ii) Penicillin and its . . . . | [ I. C. T. item No. 28(26A) ] |
| (iii) Antibiotics such as Streptomycin, gramicidin, tyrocidine and tyrothricin. | [ I. C. T. item No. 28(27) ] |
| (iv) Sulpha drugs and vitamin preparations execluding fish liver oil: Vitamin A and E excluding fish-liver oil. | [ I.C. T. items 28(28) (a) and 28(28) (b) ] |
| (v) Patent or proprietery medicines as defined in clause (d) Section 3 of the Drugs Act, 1940 not containing spirit. | [ I. C. T. item 28A] |

19.1.4. The current rates of Customs duty leviable on the specified basic drugs under our investigation and their formulations are as follows:—

TABLE 19.3

*The current rates of Customs duty on the specified basic drugs and the formulations*

| Sl. No. | Drug | I.C.T. Item No. | Rates of Duty Standard % | Customs Duty Preferential % |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| 1 | Vitamin A . . . . . . | 28(28)(b) | 20 | 17 |
| 2 | Vitamin B-12. . . .. . | 28 | 20 | 17 |
| 3 | Vitamin C . . . . . . | 28(28)(b) | 20 | 17 |
| 4 | Sulphadiazine . . . . . | 28(26)(a) | 20 | 14 |
| 5 | Penicillin . . . . . . | 28(26) | | |
| 6 | Streptomycin . . . . . . | 28(27) | 26 | 20 |

TABLE 19.3—*Contd*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 7 | Chloramphenicol . . . . . | 28(27) | 26 | 20 |
| 8 | Tetracyclines . . . . . | 28(27) | | |
| 9 | Amodiaquin . . . . . . | 28 | 27 5 | 17 5 |
| 10 | Chloroquin . . . . . . | 28 | 50 | 44 |
| 11 | Iodo-chlor-hydroxy-quinoline . . | 28 | | |
| 12 | Chlorpropamide . . . . . | 28 | | |
| 13 | Tolbutamide . . . . . | 28 | | |
| 14 | Insulin . . . . | 28 | 50 | 40 |
| 15 | I N H . . . . | 28 | | |
| 16 | P A S . . . . . . | 28 | | |
| 17 | Tetanus Anti toxin . . | 28 | | |
| 18 | Prednisolone . . . . . | 28 | | |

*Formulations*

Preparations of the above basic drugs except Penicillin are also assessed to the same rates as drugs In addition, the formulations attract the countervailing excise duty at the rates of 7 5% except in the case of I N H , P A S , Insulin, Iodo chlor hydroxy-quinoline, Penicillin and Streptomycin (including Dihydro strepto mycin) [illegible] ombina tions an [illegible] mentioned above, [illegible] There is no Exci [illegible] prepared form attracts customs duty at 50 per cent *ad valorem* (standard) and 40 per cent *ad valorem* (preferential) plus countervailing duty

19 1 5 *Import duty on raw materials and intermediates*

Most of the basic chemicals and intermediate products required by the industry fall under the General Item for chemicals i e Indian Customs Tariff Item No 28 The current rates of Customs duty applicable are 50 per cent *ad valorem* standard and 40 per

40 cent *ad valorem* preferential. Some of the chemicals and intermediates imported under this item are allowed on concessional rates of duty at different rates under notifications issued from time to time by the Ministry of Finance. The rates of import duty on raw materials and intermediates arranged in the descending order of incidence are as given in Table 19.4.

TABLE 19.4

*Rates of import duty on raw materials and intermediates*

| Sl. No. | Name of raw material/intermediates | ICT item No. | Rate of duty % Standard | Preferential |
|---|---|---|---|---|
| 1 | Blue & Red dyes . . . | 30 | 100 | .. |
| 2 | Filter Paper Folic Acid . . | 44 | 100 | .. |
| 3 | Gelatin . . . . . . | 21(1) | 100 | .. |
| 4 | Lemon Yellow Colour . . | 30 | 100 | 90 |
| 5 | Alcohol (Isopropyl and Methyl) . | 22(4) | 50 | .. |
| 6 | Beet Molasses . . . . | 17(1) | 50 | .. |
| 7 | Benzo-Cain . . . . . | 28 | 50 | 40 |
| 8 | Brewers Yeast . . . . | 87 | 50 | ... |
| 9 | Calcium Hypophosphite . . | 28 | 50 | 40 |
| 10 | Cetyle Alcohol . . . . | 28 | 50 | 40 |
| 11 | Cotton Seed Meal . . . | 87 | 50 | ... |
| 12 | Dibonzeyl Tartaric Acid . . | 28(8) | 50 | ... |
| 13 | Etharan . . . . . . | 28 | 50 | ... |
| 14 | Gam Acacia . . . . . | 13(4) | 50 | ... |
| 15 | Gum Benzoila (siam) . . . | 13(4) | 50 | 40 |
| 16 | Hedroxycobalmin (Vitamin B-12B) | 28(28)b | 50 | 40 |
| 17 | Insulin Crystalline . . . | 28 | 50 | 40 |
| 18 | Mono-Pot-Phos . . . | 28(8) | 50 | ... |

TABLE 19 4—*Contd*

| 1 | | 2 | 3 | 4 |
|---|---|---|---|---|
| 19 | Meta cresol | 28 | 50 | 40 |
| 20 | Methan l | 22(4) | 50 | — |
| 21 | M lk Sugar | 28(24) | 50 | 44 |
| 22 | Nepag n M Sod um | 28 | 50 | 40 |
| 23 | Nepag n P Sod um | 28 | 50 | 40 |
| 24 | Nod ydroghant c Ac d | 28 | 50 | 40 |
| 25 | N pasept | 28 | 50 | 40 |
| 26 | Pancreas | 87 | 50 | |
| 27 | Propylene Glycoe | 28 | 50 | 40 |
| 28 | Protam ne Sulphate | 28 | 50 | 40 |
| 29 | Potass um Dihydrogen Pho phate | 28 | 50 | 40 |
| 30 | Potass um Hyd ox de | 28(8) | 50 | |
| 31 | Potass um Carbonate | | | |
| 32 | Predn olone | 28 | 50 | 40 |
| 33 | P cotyte | 87 | 50 | |
| 34 | Soyabean meal | 23 | 50 | |
| 35 | Sod um Agmate | 28 | 50 | 40 |
| 36 | Sod um Lahryl Sulphate | 28 | 50 | 40 |
| 37 | Stearyl Alcohol | 28 | 50 | 40 |
| 38 | Sod um Phosphate | 28 | 50 | 40 |
| 39 | Tetanus Ant tox n | 28 | 50 | 40 |
| 40 | Tween 80 | 28 | 50 | 40 |
| 41 | Yeast extract | 15(b) | 50 | 40 |
| 42 | Spermaceti | 15 | 35 | |
| 43 | Iodine | 28(23) | 30 | 24 |
| 44 | Latcose B P | 28(24) | 30 | 24 |

TABLE 19.4—*Concld.*

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 45 | Aminodiazine . . . . . | 28 | 27·5 | 17·5 |
| 46 | Chloroquine Phosphate B P . . | 28 | 27·5 | .. |
| 47 | Deobase . . . . . . | 27(3) | 27·5 | .. |
| 48 | 2.5 Dichloro Nitro . . . | 28 | 27·5 | 17·5 |
| 49 | Gamma Picoline . . . . | 28 | 27·5 | 17·5 |
| 50 | Petroleum light . . . . | 27(3) | 27 | .. |
| 51 | Acid Carbolic (Phenol) . . | 28(29). | 25 | .. |
| 52 | Citric Acid . . . . . . | 28 (8) | 25 | .. |

19.1.6. There are certain chemicals, intermediates and drugs in respect of which Government have bound themselves under the General Agreement on Tariff and Trade. Particulars in respect of these are given as follows:—

TABLE 19.5

*List of drugs, pharmaceuticals, chemicals and intermediates under tariff commitments of GATT (i.e. items in respect of which India has given tariff bindings to the Contracting Parties of the General Assembly on Tariff and Trade)*

| Indian Customs Tariff Item No. | Description of products | Bound rate of duty (*Ad Valorem*) | Country to which bound |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| | PART I.—*Most Favoured Nation Tariff* | | |
| 28 | Chemicals, Drugs and Medicines all sorts not otherwise specified. | .. | FR |
| NOTE : | The products provided for under the above item shall be exempt from ordinary most favoured nation customs duties which exceed the preferential rate applicable to such products of the United Kingdom or British Colonial origin, by more than 10% *ad valorem*. | | |

TABLE 19.5—*contd*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 28 | Chemicals, the following —<br>1 Para Nitraniline<br>2 Amino Azo Benzene (hydrochloride)<br>3 Sulphanilic Acid<br>4 Benzidine Di hydrochloride<br>5 (a) Sodium Napthionate<br>(b) Naphthionic acid<br>6 Navila and winter's Acid<br>7 Rhoduline Acid<br>8 J Acid Urea<br>9 Para Amino Acetanilide<br>10 Dinitro Chlorobenzene<br>11 Meta Phenylene Diamine<br>12 Gamma Acid<br>13 Meta Tolylene Diamine<br>14 Chicago Acid<br>15 H Acid<br>16 G Salt<br>17. Laurent Acid | 10% | GY |
| 28 | Diatomaceous earth | 40 per cent | US |
| 28 | Phosphorous Pentoxide | 40 per cent | US |
| 28 | Sulphur dioxide | 40 per cent | US |
| 28 | Phosphorous yellow | 40 per cent | US |
| 28 | Freon type refrigerants | 40 per cent | US |
| 28 | Sodium borate, powder, excluding anhydros | 40 per cent | US |
| 28 | Ethyl Acetate | 40 per cent | US |
| 28 | Diastase of malt and diastase taka | 40 per cent | US |
| 28 | D D T | 40 per cent | US |
| 28 | Glucose, pure, powder | 40 per cent | US |
| 28 | Insecticides, Fungicides, disinfectants etc specified | 20 per cent | US |

1 2-4 Dichlorophenoxy acetic acid and its esters and salts.

2 Disodium ethylene bis-dithiocarbamate

3 Ethylene dichloride Carbon tetrachloride mixture (3 1)

4 Methyl chlorophenoxy acetic acid i e 2 methyl 4-Chlorophenoxy acetic acid its esters and salts

5 Nicotane and its sulphate including solutions thereof not containing any other pesticidal compounds such as Derris root and Hellebore

TABLE 19.5—*Contd.*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| | 6. Organo-Phosphatic esticides of the following types; O-Diethyl-O-phitro henyl thiophosphate (commonly known as "Parathion"); Hexa-ethyl tetraphosphate and tetraethyl-pyro hos-bate but excluding "Malathion" | | |
| | 7. Sulphur dust passing through 300 mesh. | | |
| | 8. Wettable sulphur. | | |
| | 9. Zinc ethylene-bis-dithiocargamate. | | |
| | 10. 1, 2, 3, 4, 10, 10-hexachlor-6 7, epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4, 5, 8-endo-endo-dimethanona-phchalene. | | |
| | 11. 1, 2, 3, 4, 10, 10-hexachlor-1, 4, 5, 8, 8-hexahydro-1, 4, 5, 8 and O-exo-dimethanonaphthalene. | | |
| | 12. 1, 2, 3, 4, 5, 6, 7, 8, 8a-octachlor, -2, 3, 3a, 4, 7, 7a-hexahydro-4, 7 methonodene. | | |
| 28 | Pectin, powder, dried . . . . . . | 30% | DEN |
| 28A | Patent or proprietary medicines as denfied in clause (d), Section 3 of the Drugs Act, 1940 (XXIII of 1940) not containing spirit and not otherwise specified. | — | FR |

NOTE : The products provided for under the above items, ex 28, shall be exempt from ordinary most-favoured nation customs duties which exceed the preferential rate applicable to such products of the United Kingdom or British Colonial Origin, by more than 10 per cent *ad valorem.*

| | | | |
|---|---|---|---|
| 28A | Homoeopathic medicines . . | Rate of duty actually charged at the time for such products of United Kingdom or British Colonial Origin plus 10 per cent *ad valorem* plus 5 per cent of the total value. | GY |
| 28(8) | Citric and tartaric acids, other than synthetic | 25 per cent | IT |
| 28(8) | Potassium Chlorate . . . . . . | 25 ,, | SW |
| 28(14) | Viscose Sponges . . . . . . . | 37 ,, | SW |
| 28(21) | Acetyle salicylic acid in tablets or in powder; Atropine Sulphate Cresylic Acid Hyoscine hydrobromide phenobarbital. | 30 ,, | ALA |
| 28(22) | Cod liver oil packed in containers not exceeding 4 lbs. in capacity. | 30 ,, | NOR |

TABLE 19.5—*Concld.*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 28(23) | Iodine in crude form . . | 30 per cent | CHL |
| 28(24) | Lactose (Sugar of milk) . . . . | 30 ,, | NZ |
| 28(26) | Penicillin in bulk . . . . . . | 30 ,, | US |
| 28(26A) | Penicillin and its products, not otherwise specified | 30 ,, | US |
| 28(27) | Antibiotics such as streptomycin, gramicidin, tyrocidine and tyro-thricin | 20 ,, | US |
| 28(28) | Sulpha drugs and vitamin preparations excluding fish liver oils | 30 ,, | US |
| 28(28) | Vitamins A and E excluding fish liver oils | 30 ,, | ALA |
| 28(29) | Acetic acid, boric acid, Borax and Phenol (Carbolic Acid) | 25 ,, | US |

PART II—*Preferential Tariff*

28 Chemicals, the following ·

1. Para Nitraniline
2. Amino Azo Benzene Hydrochloride
3. Sulphanilic Acid
4. Benzidine Di Hydrolchloide
5. (a) Sodium Naphthionate
   (b) Naphthionic Acid
6. Navile and winthers's Acid
7. Rhodulane Acid
8. J. Acid Urea
9. Para Amino Acetanilide
10. Dinitro Chlorobenzene
11. Meta Phenylene Diamine
12. Gamma Acid
13. Meta Tolylene Diamine
14. Chicago Acid
15. H Acid
16. G Salt
17. Saurent Acid . . . . . . . Free

28A Homoeopathic Medicines — 26% plus 5% of the total duty

28(27) Antibiotics such as Streptomycin, Gramicidin, tyrocidine and tyrothricin — 14%

NOTE—Preferential rate not bound but shown only for the purpose of establishing the margin of preference

19.1.7. The industry has made a general plea that the rates of duty on basic chemicals and intermediates are high and should be reduced so that the costs of production of basic drugs and formulations can be brought down.

**19.2. Sales Tax :**

The Central Sales Tax on drugs is levied at 3 per cent for registered dealers and at 10 per cent on un-registered dealers. The States sales tax varies from State to State as indicated below:

TABLE 19.6

*Rates of Sales Tax levied by different States on drugs*

| STATE | RATE | | |
|---|---|---|---|
| Andhra Pradesh | 4% | Single | point |
| Assam | 7% | ,, | ,, |
| Bihar | 4% | | |
| Delhi | 5% | | |
| Gujarat | 3% | | |
| Madras | 2½% | Multi | point |
| Madhya Pradesh | 2% | Single | point |
| Maharashtra | 3% | ,, | ,, |
| Mysore | 3% | Multi | point |
| Kerala | 3% | ,, | ,, |
| Orissa | 5% | Single | point |
| Punjab | 6% | ,, | ,, |
| Rajasthan | 6% | ,, | ,, |
| West Bengal | 5% | ,, | ,, |
| Uttar Pradesh | 2% | ,, | ,, |

**19.3. Excise duty :**

19.3.1. The Central Excise duty is levied under the provisions of the Central Excise and Salt Act, 1934 and is administered and collected by the Central Excise authorities. Another Excise duty is levied under the Medicinal and Toilet Preparations (Excise Duties) Act, 1955. But this is administered and collected by the State Excise authorities.

19.3.2. *Central Excise Duty* :

There is no Central Excise duty on basic bulk drugs. Formulations of drugs are assessed to Central Excise Duty under item 14E of Central Excise Schedule. The normal rate of duty is 7.5 per cent *ad valorem*. Certain essential preparations are exempted

from duty and certain others are assessed to a lower rate of 2.5 per cent *ad valorem*. The duty is levied only on patent and proprietary medicines sold under brand names and not on preparations sold under generic names and included in the recognised pharmacopoeias. Under Rule 100A of Central Excise Rules, 1944, which came into effect on 29th July 1967, provision has been made for granting refund of excise duty on time expired or defective patents or proprietary medicines which are destroyed under Excise supervision. Rates of Central Excise duty on formulations under 'Brand names' are as given in Table 19.7

TABLE 19.7

*Central Excise duty leviable on drugs and pharmaceuticals*

| Item No of Central Excise Schedule | Description of Goods | Rate of duty |
|---|---|---|
| 1 | 2 | 3 |
| 14E | Patent or proprietary medicines not containing alcohol, opium, Indian hemp or other narcotic drugs or other narcotics other than those medicines which are exclusively ayurvedic, unani, sidha or homoeopathic<br><br>*Explanation I*—Patent or proprietary medicine means any drug or medicinal preparation in the internal or external treatment of or for the prevention of ailments [illegible]<br><br>Gazette, or which is a brand name that is a name or registered trade mark under the Trade and Merchandise Marks Act, 1958 (43 of 1958) or any other mark such as a symbol, monogram, label signature or invented words or any writing which is used in relation to that medicine for the purpo e of indicating or so as to indicate a connection in the course of trade between the medicine and some persons having the right either as propietor or otherwise to use the name or mark with or without any indication of the identity of that person | 10 per cent *ad valorem* |

TABLE 19.7—*Contd.*

| 1 | 2 | 3 |
|---|---|---|
| | *Explanation II*:—"Alcohol", "Opium" "Indian Hemp", "Narcotic Drugs" and "Narcotics" have the meaning respectively assigned to them in Section 2 of the Medicinal and Toilet Preparations (Excise Duties) Act, 1955. | |
| | NOTES.—(1) Under Government of India, Ministry of Finance (Department of Revenue) Notification No. 104/61-Central Excises, dated the 20th April, 1961, medicinal contraceptives are exempt from the payment of the excise duty leviable thereon. | |
| | (2) Under Government of India, Ministry of Finance (Department of Revenue), Notification No. 105/61-Central Excises, dated the 10th November, 1961, clinical samples issued by any manufacturer of patent or proprietary medicines are exempt from the payment of the excise duty leviable thereon, provided— | |
| | (i) such clearances are limited to a quantity not exceeding 5 per cent by value of the total duty paid clearances during the preceding month of all types of patent or proprietary medicines, | |
| | (ii) samples are intended for free supply to hospitals, nursing homes or medical practitioners or for test in a laboratory, or for use by the Central Excise or Drugs Control authorities, and | |
| | (iii) the samples are packed in a form distinctly different from regular trade packing and each smallest packing is clearly and conspicuously marked 'samples, not for sale'. | |
| | (3) Under Government of India, Ministry of Finance (Department of Revenue) Notification No. 144/65-Central Excises, dated the 4th September 1965, patent or proprietary medicines manufactured wholly or partly out of imported materials are exempt from the payment of so much of excise duty leviable thereon as is equivalent to the amount of Customs duty already paid on such imported materials under Section 2A of the Indian Tariff Act, 1934. | |

TABLE 19.7—*Contd*

| 1 | 2 | 3 |
|---|---|---|
| | (4) Under Government of India, Ministry of [illegible] of Revenue Notifica- [illegible] | |
| | 1 ABR Antigen for Milk Ring Test in Brucellosis | |
| | 2 Anti Brucella Diagnostic Serum | |
| | 3 *Autogenous vaccine* | |
| | 4 *Cultures of Micro-organisms* | |
| | 5 Equine Abortion vaccine | |
| | 6 Fowl Cholera Antiserum | |
| | 7 Healthy sera from horse, sheep, cattle and goat | |
| | 8 *Johnin* | |
| | 9 Mixed Streptococcic vaccine | |
| | 10 Salmonella Pullorum plain and coloured Antigen | |
| | 11 Salmonella Pullarum positive serum | |
| | 12 Salmonella Abortus Equipositive serum | |
| | 13 Sheep and Goat Dermatitis Virus | |
| | 14 Sheep and Goat Pox Vaccine | |
| | 15 Standard Brucella Abortus plain and coloured antigen for test | |
| | (5) Under Government of India, Ministry of Finance (Department of Revenue) Notification No 16/62 Central Excises, dated the 7th April, 1962, 'anaesthetics' falling under this term are exempt from the payment of excise duty leviable thereon | |
| | (6) Under Government of India Ministry of Finance (Department of Revenue) Notification No 33/62 Central Excises dated the 24th April 1962 patent or proprietary medicines specified in column 1 of the Table below are exempt from the payment of so much of the excise duty leviable thereon as in excess of the duty specified in the corresponding entry in column 2 thereon | |

TABLE 19.7—*Contd.*

| 1 | 2 | 3 |
|---|---|---|
| | **Description** | **Duty** |
| | 1 | 2 |
| | Sera and Vaccines | Nil |
| | All other patent or proprietary medicines | 7½ per cent *ad valorem* |

(7) Under Government of India, Ministry of Finance (Department of Revenue and Insurance), Notification No. 161/66-Central Excises, dated the 8th October, 1966, the Central Government hereby exempts patent or proprietary medicines, falling under this item from so much of the duty of excise leviable thereon as is in excess of the duty calculated on the basis of —

(i) the value arrived at after allowing a discount of 10 per cent on the prices specified in the price-list showing the wholesale prices referred to in the Drugs Prices (Display and Control) Order, 1966 issued under Section 3 of the Essential Commodities Act, 1955 (10 of 1955), or

(ii) the value arrived at after allowing a discount of 25 per cent on the price as specified in the price list showing the retail prices referred to in the said order:

Provided that the aforesaid exemption shall be admissible only if the price-list represents the prices at which the medicines are ordinarily sold to retail dealers or consumers, as the case may be:

Provided further that a manufacturer shall, at his option be allowed to claim exemption under the notification in respect of all medicines cleared by him either in relation to the wholesale prices or in relation to the retail prices:

Provided further that when once a manufacturer had exercised such option in any financial year he shall not be entitled to vary that option in that financial year.

*Explanation.*—In the price specified in the price list referred to above, the element of excise duty, if any, added to the price of any of the medicines shall be deducted before allowing the discount.

TABLE 19.7—*Contd.*

| 1 | 2 | 3 |
|---|---|---|
| (8) | [illegible] (Finance Notifica- [illegible] the 8th [illegible] hereby [illegible]<br>1 Quinine and its salts, Totaquina and Cinchona *Febrifuge*,<br>2 Dapsone;<br>3 Isoniazid;<br>4 Para amino Salicylic Acid, its salts and esters,<br>5 Insulin, all types;<br>6 Iodo-chlor-hydroxy-quinoline, Di Iodo-hydroxy-quinoline and Emetine,<br>7 Ethionamide;<br>8 Cycloserine,<br>9 Pyrazinamide<br>10 Thiacetazone,<br>11. Chlorohydroxy quinoline,<br>12. Penicillin and Streptomycin including Dihydro- [illegible]<br>in therapeutic or prophylactic quantities | |
| (9) | Under Government of India, Ministry of Finance (Department of Revenue), Notification No 6/64- [illegible]<br>clearance from the factory:<br>Provided that where such repacking or relabelling or both is done in a manner which reduces the value of the medicines cleared no part of the duty already paid shall be refunded to the manufacturer on account of such reduction value. | |

TABLE 19.7—*Contd.*

| 1 | 2 | 3 |
|---|---|---|
| (10) | Under Government of India, Ministry of Finance (Department of Revenue and Insurance), Notification No. 117/66-Central Excise, dated the 16th July, 1966, as subsequently amended by Notification No. 193/66-Central Excise, dated the 24th December, 1966 the Central Government hereby exempts patent or proprietary medicines falling under this item and supplied directly from the factory of the manufacturer to Government Departments including railways, local bodies and hospitals from so much of the duty of excise leviable thereon as is in excess of—<br><br>(i) 2½ per cent, in respect of the medicines specified in the Notification of the Government of India in the Ministry of Finance (Department of Revenue and Insurance) No. 160/66-Central Excise, dated the 8th October 1966, and<br><br>(ii) 7½ per cent in respect of all other medicines of the value calculated on the basis of price excluding Central Excise duty fixed under the terms of relevant contract between the parties for such supply:<br><br>Provided that the aforesaid exemption shall be admissible only if the price referred to above represents the price actually charged by the manufacturer in respect of such supplies and evidence in support of that is produced before the Central Excise officer.<br><br>*Explanation*.—For the purposes of this notification, "manufacturer" includes with reference to any area his sole distributor in that area or branch office situated therein. | |
| (11) | Under Government of India, Ministry of Finance (Department of Revenue and Insurance), Notification No. 25/67-C E, dated 4-3-1967, the Central Government hereby exempts pharmacopoeial preparations containing single therapeutic agents and falling under this item, from the whole of the duty of excise leviable thereon:<br><br>Provided that the said pharmacopoeial preparations are cleared from the manufactory in bulk quantity in a form which is not ready for use, that is, not in a dosage form and without a label or other indication of dose, method of usage or application or any other therapeutic information. | |

TABLE 19 7—*Concld.*

| 1 | 2 | 1 |
|---|---|---|
| | *Explanation*—For the purpose of this notification— | |
| | (1) | |
| | (2) the expression 'bulk quantity' means a quantity ... 1 000 doses or more the dosage | |

19 3 3 *The Medicinal and Toilet Preparation (Excise Duty)* A... 1955—In 1955 Parliament enacted legislation to provide for t... levy and collection of duties of excise on medicinal and to... opium, Indian hemp or oth... The rules framed under the A... provide for ... ection, refund of and exempti... from the duty leviable under the Act, manufactured in bo... and outside bond, warehousing, licensing and inter-State mo... ment of the goods dutiable under the Act These lay down th... all the powers including the collection of excise duty under t... Rules are exercisable by the Excise Commissioners of t... in certain ca...

(i) hospitals and dispensaries working under ... of the Central or State Government,

(ii) hospitals and dispensaries subsidised by the Central ... State Government,

(iii) charitable hospitals and dispensaries under the admin... trative control and management of local bodies, and

(iv) every other institution certified by the Principal Medical Officer of the district in which such institution is situated as supplying medicines free to the poor.

The current rates of duty levied under the Medicinal and Toilet Preparation (Excise Duty) Act, 1955 are as given in Table 19.8.

TABLE 19.8

*Excise duties leviable on goods specified in item* 84 *of List I of the* 7*th Schedule to the Constitution of India*, viz., *medicinal and toilet preparations containing alcohol, opium, Indian hemp or other narcotic drugs, or narcotic under the Medicinal and Toilet preparations (Excise Duties) Act*, 1955

| Sl. No. | Particulars | Rate of duty |
|---|---|---|
| 1 | 2 | 3 |
| | *Medicinal Preparations* | |
| 1. | Allopathic Medicinal Preparations | |
| | (i) Medicinal preparations containing alcohol which are not capable of being consumed as ordinary alcoholic beverages— | |
| | (a) Patent or proprietary medicines | 10 per cent *ad valorem* or Rs. 1.10 Per litre of the strength of London proof spirit, whichever is higher. |
| | (b) Others | Rs. 1.10 per litre of the strength of London proof spirit. |
| | (ii) Medicinal preparations containing alcohol which are capable of being consumed as ordinary alcoholic beverages— | |
| | (a) Medicinal preparations which contain known active ingredients in therapeutic quantities | 10 per cent *ad valorem* or Rs. 3.85 per litre of the strength of London proof spirit, whichever is higher. |
| | (b) Others | Rs. 15.50 per litre of the strength of London proof spirit. |
| | (iii) Medicinal preparations not containing alcohol but containing opium, Indian hemp or other narcotic drug or narcotic. | 10 per cent *ad valorem*. |

TABLE 19.8—*Contd*

| 1 | 2 | 3 |
|---|---|---|
| 2 | Medicinal preparations in Ayurvedic Unani or other indigenous system of medicines— | |
| | (i) Medicinal preparations containing self generated alcohol which are not capable of being consumed as ordinary alcohol beverages | Nil |
| | (ii) Medicinal preparations containing self generated alcohol which are capable of being consumed as ordinary alcoholic beverages | 38 paise per litre of the strength of London proof spirit |
| | (iii) All others containing alcohol which are prepared by distillation or to which alcohol has been added | Rs 15 50 per litre of the strength of London proof spirit |
| | (iv) Medicinal preparations not containing alcohol but containing opium, Indian hemp, or other narcotic drugs or narcotic | 10 per cent *ad valorem* |
| 3 | Homoeopathic preparations containing alcohol | Rs 3 85 per litre of the strength of London proof spirit |
| | *Toilet Preparations* | |
| | Toilet preparations containing alcohol, opium, Indian hemp, or other narcotic drug or narcotic. | 25 per cent *ad valorem* or Rs 3 85 per litre of the strength of London proof spirit whichever is higher |

*Explanation I*—Patent or proprietary medicines

notified in this behalf by the Central Government in the Official Gazette, or which is a brand name, that is a name or a registered trade mark under the Trade and Merchandise Marks Act, 1958, or any other mark such as a symbol monogram, label signature or invented words or any writing which is used in relation to that medicinal preparation for the purpose of indicating or so as to indicate a connection in the course of trade between the preparation and some person having the right either as preparation and some person having the right either as proprietor or otherwise to use the name or mark with or without any indication of the identity of that person

TABLE 19.8—*Concld.*

| 1 | 2 | 3 |
|---|---|---|
| | *Explanation II*—Where any article is chargeable with duty at a rate dependent on the value of the article, such value as determined in accordance with the provisions of section 4 of the Central Excises and Salt Act, 1944. | |
| | *Explanation III*—Where in respect of any dutiable goods the unit assessment for the purpose of any duty under this Act is a litre of the strength of London proof spirit, the duty shall be increased or reduced in such proportion as the strength of the dutiable goods is greater or less than that of the London proof spirit. | |

19.4.1. The industry has made certain representations with regard to difficulties that are being experienced in the matter of these levies. It has, for instance, been mentioned that owing to lack of uniformity in the Sales Tax Acts and Rules of different States, the maintenance of a uniform price structure throughout the country is not possible. It has also stated that the differential tax rates result in unauthorised movement of drugs from one State to another. Certain municipal corporations and municipalities also levy Octroi on medicines and the rates of such levy vary. It has been suggested that the Central and States sales tax may be merged and receipts reallocated centrally.

19.4.2. The Indian Chemical Manufacturers' Association has pointed out the following procedural difficulties in the administration of the two Acts (and Rules) relating to excise.

(1) *Price approvals for Central and State Excise* : Under *ad valorem* basis of assessment both for Central and State Excise duties, the price has to be approved by the Excise Authorities before clearance. Price approvals are given by the Excise Authorities only on provisional basis and very aften for an indefinite period. This imposes a threat that if the prices are not approved subsequently, the manufacturers will be liable to pay duty at the revised higher rate which they will not be able to collect with retrospective effect from their customers. It has, therefore, been suggested that a time limit of preferably two weeks, but in any case not more than one month, be imposed on all such price approval by Excise Authorities so that further liabilities on this account could be avoided.

(2) Recoveries with retrospective effect are made under the provisions of Rule 10(a) of the Central Excise Rules and No 12 of the Medicinal and Toilet Preparations (Excise Duties) Rules and some times demand notices on past assessment even for periods of 4 to 5 years are issued A suggestion has been made that these rules should be so modified that the application is rejected only in cases where excise duty is required to be levied retrospectively on certain products by the Government of India in the course of any accounting year and not later

(3) *Non recognition of Loan Licensing permitted by the Drugs Act* Under the Drugs and Cosmetics Act and Rules, loan licensing arrangements are permitted for manufacture of pharmaceuticals, whereas the Central Excise department does not recognise such loan licensing arrangements and makes it obligatory for the principal manufacturer to clear products of loan licensees Serious difficulties arise especially when the companies have different modes of sales and distribution It has therefore been suggested that the loan licencee should be assessed independently by the Central Excise Department

(4) *Lac of uniformity in Excise procedures in Central and State Excise Administration* All patent and proprietary medicines except alcoholic products are subject to duty under the Central Excise Act, whereas similar medicines containing alcohol are subject to duty under Medicinal and Toilet Preparations (Excise Duties) Act Both these Acts are Central Government Acts but the administration of the latter is left to the State Governmen This results in a lack of uniformity in the implementation of the two Acts regarding the mode of assessment, the rate of duty, free clearance of samples, etc The Central Excise duty was reduced from 10 per cent to 7½ per cent for Patent and Proprietary medicines and 2½ per cent for Essential Drugs, whereas the Medicinal and Toilet Preparations (Excise Duties) Act retains the duty at 10 per cents Also the latter Act does not allow an alternative mode of assessment as provided in the Central Excise Act Free clearance of samples upto 5 per cent is also not permitted in the former Act These disparities create considerable hardship to the assessees It has, therefore, been suggested that the two Excise Acts should be made more uniform in their implementation and should preferably be implemented by the same authorities to avoid duplication of work

19 4.3 The Organization of Pharmaceutical Producers of India has also made certain comments in this respect It has stated

that under the Central Excise and Salt Act duty is levied on the maximum retail prices but there is no duty on the same drugs, if these are sold, under generic names. This distinction is in the view of the Organisation not fair. It has also stated that there are innumerable time consuming procedural routines connected with the administration of the Medicinal and Toilet Preparations (Excise Duties) Act, 1955.

19.4.4. We are of the view that the anomalies pointed out by the manufacturers Associations should be removed. In the matter of raw materials and intermediates needed specifically for the drug industry which are being manufactured in the country but not in adequate quantities to meet the demand the rates of duty vary from 14 per cent to 100 per cent. It would be desirable in these cases to promulgate a concessional rate of duty in consideration of the fact that the drugs do not have adequate indigenous production. These concessional rates may be effective until such time as indigenous production is established. In case of raw materials and intermediates for which there is no domestic production and which are not likely to be produced in the near future, the rates of duty may be even lower than the rates on raw materials and intermediates which are being produced in inadequate quantities. It would, however, be desirable in the case of the former to ensure that a manufacturer in the country has to pay a uniform price irrespective of the fact whether the raw material or intermediate is imported or supplied from indigenous sources. A system of pooling centrally by the State Trading Corporation or a similar organisation may in such cases be introduced in order to ensure that no manufacturer is in a more advantageous position in the matter of availability of raw material than others.

## CHAPTER 20

## IMPORTS

20 1 The import of seven out of the 18 specified basic drugs is allowed at present, according to the reply received from the D G T D, on the ground that the local output is not adequate to meet the entire requirements of the country These are —

(1) Sulphadiazine
(2) Streptomycin
(3) Tetracyclines
(4) Amodiaquin
(5) Chloroquin
(6) Tolbutamide
(7) Tetanus Anti toxin

Sulphadiazine, Chloroquin and Tetanus Anti toxin are allowed to be imported on a restricted basis The formulations of these drugs are, however, not permitted to be imported The import policy in respect of each o the specific drugs for the years 1965 66, 1966 67, 1967 68 and 1968 69 has b en set out in Appendix IX While previously there were some q otas for permi sible drugs, for the year 1967 68 there was and overall quota of 23 percent of the best year s imports and permissible drugs were allowed to be imported within this quota by the drug m nufacturers

20 2 In July, 1966 following the devaluation of the rupee Government of India announced import liberalisation policy in respect of 59 "Priority industries In terms of this policy units belonging to th se indus ries were permitted import of raw materials on a liberal scale In case of units registered with the Directorate General of Technical Development, units were requi ed to apply through that Directorate but in the case of small scale units they were issued import licences for a value three times the value of l cences issued du ing 1964 65 and covering the same items mentioned in th ir 1964 65 licences Further the importer was given the f eed m to import any drug in as much quantity as he liked within the overall value of the licence This resulted in a situation where certain basic drugs like Chloramphenicol,

Vitamin C, I.N.H. could be imported by manufacturers merely because they occurred in their 1964-65 licences even though they were being produced in the country in fairly adequate quantities.

20.3. As the price differential between the import price and the local selling price in respect of these drugs was high, manufacturers availed of this opportunity and imported large quantities of such drugs. These drugs were also imported in substantial quantities under the National Defence Remittance Scheme and against licences issued under the Export Promotion Scheme.

20.4. The position of the production within the country of the permissible drugs and their imports during the years 1964, 1965, 1966 and 1967 is given in Table 20.1.

TABLE 20.1

*Installed capacity, production, imports and domestic consumption of basic drugs permitted for imports*

| Sl. No. | Name of the basic drug | Unit of measurement | Installed capacity | | | | Production | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1964 | 1965 | 1966 | 1967 | 1964 | 1965 | 1966 | 1967 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Sulphadiazine . . . | Tonnes | 118 | 193 | 193 | 193 | 77 | 108 | 77 | 44 |
| 2 | Streptomycin . . . . | ,, | 70 | 120 | 120 | 120 | 58 | 92 | 104 | 125 |
| 3 | Tetracyclines . . . . | ,, | 23·0 | 25·5 | 25·5 | 25·5 | 19·8 | 20·6 | 19·8 | 15·7 |
| 4 | Amodiaquin . . . . | ,, | 36·6 | 36·6 | 36·6 | 36·6 | 10·0 | 10·7 | 15·0 | 11·6 |
| 5 | Chloroquin . . . | ,, | 1·3 | 3·0 | 3·0 | 3·0 | 1·2 | 2·4 | 2·8 | 3·4 |
| 6 | Tolbutamide . . . . | ,, | 42·6 | 42·6 | 42·6 | 42·6 | 11·0 | 16·5 | 24·9 | 12·0 |
| 7 | Tetanus Anti-toxin . . . | Thousand M.U. | 11·5 | 12·7 | 14·3 | 14·3 | 8·4 | 4·9 | 5·5 | 6·9 |

TABLE 20 1—*Contd*

| Sl No | Name of the basic drug | Unit of measurement | Imports | | | | Total (Production+Imports) | | | | Domestic consumption | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1964 | 1965 | 1966 | 1967 | 1964 | 1965 | 1966 | 1967 | 1964 | 1965 | 1966 | 1967 |
| 1 | 2 | 3 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 1 | Sulphadiazine | Tonnes | 64 | 59 | 109 | 122 | 141 | 167 | 186 | 166 | 146 | 161 | 182 | 176 |
| 2 | Streptomycin | ,, | 51 | 44 | 2 | 62 | 109 | 136 | 106 | 187 | 118 | 143 | 106 | 188 |
| 3 | Tetracyclines | ,, | 2 0 | 3 3 | 32 0 | 23 1 | 21 8 | 23 9 | 51 8 | 38 8 | 15 7 | 22 0 | 50 1 | 40 7 |
| 4 | Amodiaquin | ,, | 8 0 | | | | 18 0 | 10 7 | 15 0 | 11 6 | 17 8 | 11 6 | 15 0 | 9 8 |
| 5 | Chloroquin | ,, | 12 5 | 15 5 | 2 4 | 18 5 | 13 7 | 17 9 | 5 2 | 21 9 | 13 8 | 15 1 | 6 1 | 21 9 |
| 6 | Tolbutamide | ,, | 1 6 | 1 2 | 0 5 | 1 5 | 12 6 | 17 7 | 25 4 | 13 5 | 13 1 | 13 7 | 20 0 | 20 4 |
| 7 | Tetanus Anti toxin | Thousand M U | 6 2 | 15 0 | 4 5 | 5 1 | 14 6 | 19 9 | 10 0 | 12 0 | 14 6 | 19 9 | 10 0 | 11 5 |

20.5 The above Table indicates the following picture with regard to each of the seven drugs :

*Sulphadiazine*

The installed capacity for the production of Sulphadiazine in the country is 193 tonnes. Production went upto 108 tonnes in 1965. The total consumption in the country without taking into account any carry over of imports during the last four years was 146, 161, 182 and 176 tonnes. If the entire capacity which has been established could be realised the total demand in the country could have been met. In 1965 when the installed capacity was already 193 tonnes the production was 108 tonnes and the imports were 59 tonnes. But next year the imports went up to 109 tonnes, with the result that production fell down to 77 tonnes. The reason for allowing import was that the cost of the penultimate intermediate from which Sulphadiazine was manufactured was very high and that it was more economical to import the finished product.

*Streptomycin*

For Streptomycin the licensed capacity in the country is 215 tonnes, but the installed capacity is only 120 tonnes. In 1965 the production was 92 tonnes and imports were 44 tonnes. Next year the imports were only 2 tonnes and the production went up to 104 tonnes. In 1967 the production was 125 tonnes but the imports were also heavy at 62 tonnes. Domestic consumption has shown considerable fluctuations during the years 1964 to 1967. In 1964 it was 118 tonnes, 147 tonnes in 1965 and then it fell down to 106 in 1966 and went up to 178 in 1967. If the entire licensed capacity is realised the necessity for imports could be obviated. However, in the case of this drug it cannot be said that imports had any depressing effect on the indigenous production since the maximum production in accordance with the installed capacity was achieved in 1967.

*Tetracyclines*

The licensed capacity stands at 145 tonnes, but the installed capacity is only 25.5 tonnes. Production in 1963 was 21.5 tonnes when the installed capacity was only 18 tonnes. Imports in 1964 and 1965 were two and three tonnes respectively and in 1966 imports were heavy, being 32 tonnes and in 1967 these were 23.1 tonnes. Production had gone up to 20.6 in 1965, but fell down to 19.8 in 1966 and further down to 15.7 tonnes in 1967. Domestic consumption was only 15.7 tonnes in 1964, 22.0 tonnes

in 1965, but went up to more than double at 50 1 tonnes in 1966 and again it came down to 40 7 in 1967 Here again import have been responsible for the low utilisation of the installed capacity

*Amodiaquin*

Licensed and installed capacity is 37 tonnes almost since 1956 The best production was 15 tonnes in 1966 Imports were made in 1964 only The domestic production appears to be adequate to meet the indigenous demand

*Chloroquin*

As against the licensed capacity of 26 tonnes the installed capacity is only 3 tonnes and the best production was in 1967 of 3 4 tonnes The licences were granted between 1960 and 1963 Domestic requirement did not show any specific trend since this was only 6 1 tonnes in 1966 as against 13 8 in 1964 and 21 9 in 1967 Considerable quantities of this drug have been and will continue to be imported until the domestic installed capacity matches the licensed capacity and the units go into full production

*Tolbutamide*

Imports during the last four years have varied between 0 5 and 1 6 tonnes As against this the production during the same period was between 11 0 and 24 9 tonnes Domestic consumption has gone up steadily from 13 1 in 1964 to 13 7, 20 0 and 20 4 tonnes during the years 1965 1966 and 1967 respectively It is quite possible that the domestic production could be relied upon to supply the entire domestic demand since one of the units is capable of producing about 24 tonnes, as it did in the year 1966 No imports appear to have been necessary

*Tetanus Anti toxin*

This is one of the drugs of which heavy imports have been made in the past and the imports have affected domestic production In 1963 production within the country was 8 100 M U, in 1964 it was 8 400 M U, but it fell down to 4 900 M U in 1965 rose to 5 500 in 1966 and to 6 900 M U in 1967 Imports were 6 200 M U in 1964 but went up to 15 000 M U in 1965 *In the two subsequent years these matched almost the domestic* production Domestic installed capacity is 14 285 M U and it could have satisfactorily met the entire demand even if there were no imports

20 6 In addition to these seven permissible drugs there have been considerable imports of some other drugs also, such as

Vitamin B-12, Vitamin C, Penicillin, Chloramphenicol, Insulin, I. N. H. and P. A. S. Out of the 18 drugs under our survey there are only four drugs of which imports had been nil or in very small quantities and these are Vitamin A, Iodo-chlor/ Di-iodo hydroxy-quinoline, Chlorpropamide and Prednisolone. The picture of imports of the seven basic drugs with considerable imports is as follows:—

*Vitamin B-12*

This is on the banned list. Production plus import of this drug, together in 1964 and 1965 was 22.4 kgs. and 27.9 kgs. respectively. As against this in 1966, 41.8 kgs. and in 1967, 43.4 kgs. were produced. Even assuming a 15 per cent increase in the demand the domestic production should have sufficed to meet the domestic needs, but heavy imports were allowed in 1967, of as much as 26 kgs. It appears that licences were given immediately after the import liberalisation but the actual import was made at a much later date resulting in a surplus availability of the drug despite adequate domestic production.

*Vitamin C*

This is one of the drugs for which imports are not allowed under the Import Control Policy. The licensed capacity is 245 tonnes and the installed capacity is 180 tonnes. The only unit which was producing this drug steadily went on increasing its production as the following figures would show :

| | | |
|---|---|---|
| 34 tonnes in | . | 1962 |
| 62 ,, | . | 1963 |
| 78 ,, | . | 1964 |
| 90 ,, | . | 1965 |
| 131 ,, | . | 1966 |

The factory was, however, closed down in the month of September 1967 owing to the heavy imports at low prices, with which the unit could not compete. Imports during the last two years were indeed very heavy and exceeded not only the domestic production but even the highest possible limit of domestic consumption. We have already dealt with this matter in Chapter 8. It may be stressed that the liberalisation policy of imports may be permitted only to the extent that a drug or a commodity is needed in the country and not with a view to create conditions of severe competition for the indigenous manufacturers, a situation in which the latter are invariably likely to suffer and be worsted in the end.

*Penicillin*

Imports of this drug have been fluctuating as the following figures would show

| | | |
|---|---|---|
| 43 M M U | in | 1964 |
| 11 | ,, | 1965 |
| 41 | ,, | 1966 |
| 78 | ,, | 1967 |

Domestic production went up from 54 MMU in 1962 to 147 MMU in 1966 but all of a sudden fell down to 119 MMU in 1967 partly owing to heavy imports and partly also due to comparative fall in demand In this case also imports should be restricted to the extent of the gap between domestic production and a reasonable estimate of domestic demand

*Chloramphenicol*

Imports during each of the four previous years have been almost the double of domestic production, even though this drug is not on the list of the pharmaceutical drugs the necessity for import of which may have been considered to exist The installed capacity is 23 3 tonnes and the production has been slightly better than the installed capacity and went up to 25 6 tonnes in 1965 but fell down to 24 3 tonnes in 1966, and further to 21 6 tonnes in 1967 The licensed capacity is 72 4 tonnes and if efforts are made to ensure the installation of the licensed capacity, the necessity for imports would be completely obviated Owing to the heavy flow of imports the consumption figures do not show any logical trends and register heavy rise and fall If the position of stocks of imports was known it might have been possible to find the actual consumption and extent to which increases where registered during each of the previous years However, since the position of the stocks of the imported drugs could not be made available the consumption figures include the entire quantity imported in a particular year, while for the indigenous production only that quantity has been adopted which was self consumed or actually sold and the rest taken over to the next year

*Insulin*

The domestic production fell down from 458 M U to 416 M U in 1967 This is attributed partly to heavy imports in the years 1964 and 1965 which were 757 M U and 520 M U respectively It is a welcome sign that the imports have fallen during 1966 and 1967 and were only 69 M U and 24 M U in these two years

*I. N. H.*

Domestic consumption has been fluctuating between 56 and 85 tonnes. Production in 1964 was 61.8 tonnes but it fell steadily from this until last year it was only 52.5 tonnes. Imports have been heavy in each of the four years and these are considered to be the cause of the fall in domestic production.

*P. A. S.*

1965 was the best year with production at 333 tonnes. Then the production fell down to 320 tonnes in 1966 and further to 256 tonnes in 1967. Imports in 1963 were of the order of 31 tonnes but 419 tonnes were imported between 1964 and 1967 giving an average of 105 tonnes annually. In this case again imports were responsible for inhibiting domestic production.

20.7. It is understood that the import of most items which are produced in adequate quantities were subsequently banned by Government. As licences issued in 1966 have mostly expired now very little imports of these items are, it is learnt, being effected at present. Once the imported stocks are exhausted the off take from the indigenous manufacturers is expected to increase. We consider that imports should always be related to the requirements of the country. Indian economy has not yet reached a stage and particularly in the chemical and pharmaceutical industries, where it can be exposed to competition from abroad or expected to establish its own market in the international field and compete at the level of international prices which in many cases are much lower than indigenous prices prevailing in the country of origin. This industry like other industries in the country has been enjoying protection in the form of quantitative restrictions on imports and if such protection is withdrawn all of a sudden and the industry is exposed to foreign competition disastrous consequences are likely to ensue. These have been amply demonstrated during our inquiry for the 18 drugs, when in the case of not less than six items, the fall in the domestic production and setback to the industry has resulted from unplanned imports based on such estimates of production and demand, which were neither realistic nor helpful to the consolidation and development of the domestic units. Basic manufacture of drugs in the country has been established after considerable effort and no steps should be taken which may retard the progress already made.

## CHAPTER 21

## EXPORTS

21 1 Before devaluation there was setback in exports in the year 1963 64 compared with the year 1962 63 But since then there was an increasing trend Import entitlements at twice the import content of raw material with a ceiling of 75 per cent of the price of the exported product did help in some measure to further the sales of the extra production from additional raw materials supplies After devaluation, export promotion schemes were withdrawn but replenishment imports were liberalised and licences were granted upto 20 per cent of the f o b value of exports In addition, a cash subsidy or assistance of 15 per cent of the f o b value was allowed Even so, in foreign exchange terms there has been a noticeable fall in the overall exports According to the published accounts of the D G C I and S, the total exports of medicinal and pharmaceutical products amounted to Rs 3 38 crores in 1967-68 as against Rs 3 44 crores in 1966 67. This shows that the benefit from the post devaluation measures has been somewhat slow in coming From the subsequent tendencies, however, there has been some picking up of the exports.

21.2 The actual exports of medicines and drugs as recorded in the published accounts of Foreign Trade of India were of the value of Rs 1 07 crores in 1962-63, Rs 0 98 crores in 1963 64, Rs 2.11 crores in 1964 65, Rs 2 63 crores in 1965 66, Rs 3 44 crores in 1966 67, and Rs 3 33 crores in 1967-68 The break down of the export figures under broad groups is given in Table 21.1 —

TABLE 21.1.

*Exports of medicinal and pharmaceutical products*

(Value in Rupees)

| Name of the Group | 1962-63 | 1963-64 | 1964-65 | 1965-66 | 1966-67 | 1967-68 |
|---|---|---|---|---|---|---|
| Vitamins and preparations . . . | 13,94,821 | 3,56,605 | 8,91,031 | 6,81,218 | 2,27,237 | 7,88,327 |
| Bacteric Products, Sera and Vaccines . | 2,73,306 | 4,94,489 | 1,95,035 | ... | ... | ... |
| Penicillin, Streptomycin and other Antibiotics . . . . . . | 1,23,830 | 1,23,830 | 22,11,234 | 14,83,477 | 4,59,156 | 12,49,025 |
| Opium, Alkaloides Cocaine, Coffin, Quinine and other Salts and derivatives | 20,93,439 | 17,75,577 | 63,00,472 | 1,33,52,434 | 2,33,12,379 | 1,44,69,785 |
| Hormones . . . . . . | .. | .. | ... | 71,975 | 13,052 | 15,157 |
| Glycoseds, Glands, Extracts, Sera and Vaccines. . . . . . | .. | ... | ... | 5,78,964 | 2,51,120 | 5,20,734 |
| Medicaments . . . . . | .. | ... | .. | 1,00,39,864 | 96,55,356 | 1,55,00,358 |
| Medicinal and Pharma Products NES . | 67,00,448 | 70,67,704 | 1,15,02,719 | 1,79,889 | 5,05,259 | 7,36,140 |
| | 1,05,85,844 | 98,18,205 | 2,11,00,491 | 2,63,87,821 | 3,44,23,559 | 3,32,79,526 |

21 3 The exports of the specified basic drugs were as follows

TABLE 21.2

*Exports of the specified basic drugs*

| Drug | Year | Unit | Quantity exported |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| Vitamin B 12 | 1964 | Kg | 1 2 |
| | 1965 | ,, | 0 6 |
| Vitamin C . . | 1965 | Tonne | 1 4 |
| Penicillin . . . . | 1966 | MMU | 0 3 |
| Streptomycin | 1965 | Tonne | 1 0 |
| | 1966 | ,, | 0 2 |
| Chloramphenicol | 1965 | ,, | 2 5 |
| | 1966 | ,, | 3 0 |
| | 1967 | ,, | 1 0 |
| Chloroquin | 1965 | ,, | 1 7 |
| Chlorpropamide | 1966 | ,, | 4 9 |
| I N H | 1965 | ,, | 0 5 |
| P A S | 1964 | ,, | 3 5 |
| | 1965 | ,, | 1 0 |
| Tetanus Antitoxin . | 1964 | MU | 40 |
| Prednisolone | 1967 | Kg | 75 0 |

21 4 There is some variation between the figures furnished to us by the Basic Chemicals and Pharmaceuticals and Soap Export Promotion Council, Bombay and those published in the Foreign Trade of India Since the detailed breakup was available only from the former source, the figures supplied by it have been given in the Table above

21 5 The Basic Chemicals, Pharmaceuticals and Soap Export Promotion Council has stated that India is endowed with vast botanical *species which form the starting material* for the manufacture of valuable alkaloids Even at the present

evel of exports, crude drugs contribute as much as Rs. 3 crores to the country's foreign exchange earnings. If these could be processed and the drugs obtained therefrom were exported, the value could, in the opinion of the Council, be increased to a large extent. The Organisation of Pharmaceutical Producers of India has represented that the scheme for exports in force after devaluation offered extremely inadequate incentives for encouraging exports and was not conducive to any long term development of the industry in this field. The Indian Chemical Manufacturers' Association has pointed out that frequent changes in Government policy regarding exports, extremely high cost of promotional efforts for establishing a product in a new market, low cost of production of overseas competitors, strict price control in India of drugs which prevents the manufacturers from increasing domestic prices to subsidise exports in order to compete in overseas markets, lack of sophisticated packing materials, reluctance of manufacturers to push exports for fear that it may any time be declared as non-essential, were responsible for lack of substantial exports.

21.6. The following Table 21.3 shows the difference between the fair ex-works prices of the specified basic drugs as arrived at by us and the c.i.f. prices of recent imports, expressed as percentages of the c.i.f. prices.

TABLE 21.3

*Fair ex-works prices of basic drugs compared with their latest c.i.f. prices.*

| Sl. No. | Basic Drug | Unit | Fair ex-works prices recommended by the commission (Rs.) | Latest c.i.f. Rates (at the Bombay Port) | | Percentage Variation from the price recommended by Commission (4-6 as% of 6) |
|---|---|---|---|---|---|---|
| | | | | Country from which imported | C.I.F. price. (Rs.) | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Vitamin-A-Palmitate. | 1000 MU | 391·15 | (Not imported) | .. | .. |
| 2 | Vitamin-B-12 . | gm. | 113·84 | (i) Holland | 47·25 | 140·93 |
| | | | | (ii) France | 41·33 | 175·44 |

TABLE 21 3—*Contd*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 3 | Vitamin C | kg | 72 70 | (i) Yugo lavia | 30 00 | 142 33 |
| | | | | (ii) USSR | 28 00 | 159 64 |
| | | | | (iii) Hungary | 27 82 | 161 32 |
| | | | | (iv) U S A | 26 50 | 174 34 |
| 4 | Sulphadiazine | kg | 58 89 | (i) West Germany | 41 00 | 43 63 |
| | | | | (ii) France | 40 50 | 45 41 |
| | | | | (iii) Holland | 39 60 | 48 71 |
| 5 | Penicillin— | | | | | |
| | Potassium G | B U | 351 00 | (c i f price not available) | | |
| | Potassium V | Do | 537 00 | (c i f price not available) | | |
| | Procain G | Do | 336 00 | (i) France | 144 00 | 133 33 |
| | | | | (ii) U S A | 115 35 | 191 29 |
| | Sodium-G | Do | 399 00 | (i) U S A | 203 00 | 96 55 |
| | | | | (ii) France | 172 00 | 131 98 |
| | | | | (iii) Holland | 136 00 | 193 38 |
| 6 | Streptomycin | kg | 285 00 | (i) Poland | 240 00 | 18 75 |
| | | | | (ii) Hungary | 225 00 | 26 67 |
| | | | | (iii) U S A | 225 00 | 26 67 |
| 7 | Chloramphenicol | kg | 357 66 | (i) Hungary | 136 00 | 162 99 |
| | | | | (ii) West Germany | 120 00 | 198 05 |
| | | | | (iii) Switzerland | 115 00 | 211 01 |
| | | | | (iv) Holland | 102 00 | 250 65 |
| 8 | Tetracycline . | kg | 709 25 | (i) Bulgaria | 190 00 | 273 29 |
| | | | | (ii) Poland | 170 00 | 317 21 |
| | | | | (iii) Switzerland | 160 00 | 343 28 |
| 9 | Amod aquin . | kg | 106 91 | (Not imported) | | |
| 10 | Chloroquin . | kg | 259 53 | (i) France | 133 00 | 95 14 |
| | | | | (ii) West Germany | 122 00 | 112 73 |
| | | | | (iii) U K | 122 00 | 112 73 |
| 11 | Iodo-chlorhydroxyquinoline | kg | 45 14 | (Not imported) | | |

TABLE 21.3—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 12 | Chlorpropamide | kg. | 95·60 | (i) West Germany.. | 52·00 | 83·85 |
| | | | | (ii) Italy | 51·00 | 87·45 |
| 13 | Tolbutamide . | kg. | 74·16 | (i) Poland | 37·00 | 100·43 |
| | | | | (ii) Italy | 24·00 | 209·00 |
| 14 | Insulin . . | MU | 5136·56 | (Not imported) | | |
| 15 | I. N. H. . | kg. | 91·58 | (i) West Germany. | 25·00 | 266·32 |
| | | | | (ii) Japan | 24·00 | 281·58 |
| 16 | P. A. S. . . | kg. | 31·28 | (i) France | 13·10 | 138·78 |
| | | | | (ii) Japan | 12·60 | 148·25 |
| 17 | Tetanus Antitoxin | | (No price fixed). | | | |
| 18 | Prednisolone . | kg. | 11946·21 | France | 5100·00 | 134·24 |

21.7. It would be observed that the cost of production of drugs in India is between 19 per cent to 343 per cent higher than the c.i.f. prices at which they can be imported. Unless therefore we can bring down our cost drastically it is not possible to build up any substantial exports, except at the cost of the internal market and by selling our products at less than half the cost. In so far as the export of finished drugs and formulations is concerned the future therefore does not appear to be very bright.

21.8. According to the latest figures available exports in terms of gross value of the turnover were for cerain countries as follows:—

| | |
|---|---|
| Israel . . . . . . . | 79% |
| United Kingdom . . . . . | 24% |
| United States of America . . . . | 18% |
| Italy . . . . . . . . | 11% |
| Japan . . . . . . . | 4% |
| India . . . . . . . | 2% |

As against the value of Rs. 26.51 crores of imports of drugs and intermediates and pharmaceutical chemicals in 1967-68, exports amounted to only Rs. 3.33 crores and the negative trade balance amounted to Rs. 23.18 crores.

## CHAPTER 22

## SELLING SYSTEM AND SALES PROMOTION

### 22 1 Selling system :

22 1 1 Sales of medicines by manufacturers are generally effected through distributors or stockists to druggists and chemists and the latter dispense them to consumers In certain cases sales are organised by a sole selling agent or agents who supply the goods from their regional branches and depots to the wholesalers and retailers Some leading manufacturers have their own regional offices or depots from where goods are sent to dealers Five of the manufacturers of basic drugs, namely, Boehringer-Knoll, Cyanamid, Hoechst, Pfizer and Wyeth Labs sell their products directly to formulators Producers claim that by means of continuous contracts and inspection of the depots of the distributors through the manufacturers' own staff appointed for this purpose, effective control over the selling system is exercised The selling system obtaining in the units which manufacture one or more of the basic drugs or formulations in the scope of the inquiry, is as given in Table 22 1

TABLE 22 1

(a) *Manufacturers who have sole selling distributors*

| Sl No | Name of the manufacturer | Name of the sole selling distributor |
|---|---|---|
| 1 | 2 | 3 |
| 1 | Alembic Chemical Baroda . . | Alembic Distributors Ltd , Bombay |
| 2 | Atul Products, Bulsar . . . | Voltas Ltd Bombay 1 |
| 3 | Biochemical & Synthetic, Hyderabad | Neo Pharma Pvt. Ltd Bombay |
| 4 | Boehringer Knoll, Bombay . . | Rallies (India) Ltd , Bombay |
| 5 | Cilag Hind Bombay . . . | (i) Neo Pharma Pvt Ltd , Bombay (for all products except Rarical) |
| | | (ii) Johnson & Johnson of India Ltd Bombay (for Rarical) |

TABLE 22.1—*Contd.*

| 1 | 2 | 3 |
|---|---|---|
| 6 | Dey's Medical, Calcutta . . | Dey's Medical Store (P) Ltd., Calcutta. |
| 7 | May & Baker, Bombay . . | May & Baker (India) Pvt. Ltd. Bombay. |
| 8 | Merck-Sharp, Bombay . . | Voltas Ltd., Bombay. |
| 9 | Roche Products, Bombay . . | Voltas Ltd., Bombay. |
| 10 | Synbiotics, Baroda . . . | Sarabhai Merck Ltd., Baroda. |
| 11 | Unichem Labs., Bombay . . | Unichem Distributors Ltd., Bombay |
| 12 | Wander Pharmacl, Bombay . | Vallabhdas & Co., Bombay. |
| 13 | Wyeth Labs., Bombay . . | Geoffrey Manners & Co., Ltd., Bombay. |
| 14 | Franco-Indian Manufacturing, Bombay. | Franco-Indian Pharmaceuticals Pvt. Ltd., Bombay. |
| 15 | Pharma Products, Thanjavur . | Vijaya Agencies, Thanjavur. |

(b) *Manufacturers who have sales offices at important places*

| Sl. No | Name of the manufacturer | Number of sales offices run by them |
|---|---|---|
| 1 | Bengal Immunity, Calcutta . . . . | 13 |
| 2 | Bengal Chemical, Calcutta . . . . | 4 |
| 3 | Boots Pure Drug Co., Bombay . . . . | 3 |
| 4 | CIPLA, Bombay . . . . . . | 6 |
| 5 | East India Pharmaceutical, Calcutta . . | 17 |
| 6 | Fairdeal Corporation, Bombay . . . . | 3 |
| 7 | Glaxo Laboratories, Bombay . . . . | 12 |
| 8 | Geoffrey Manners, Bombay . . . . | 9 |
| 9 | Martin & Harris, Calcutta . . . . | 21 |
| 10 | Oriental Pharmaceutical Industries, Bombay . | 7 |
| 11 | Pfizer, Bombay . . . . . . | 16 |
| 12 | Rallies India, Bombay . . . . . | 16 |
| 3 | Standard Pharmaceuticals, Calcutta . . . | 8 |
| 4 | Smith, Stanistreet, Calcutta . . . . | 14 |
| 5 | Sarabhai Chemicals, Baroda . . . . | 18 |
| 6 | Sarabhai Merck, Baroda . . . . . | 5 |
| 7 | Zandu Pharmaceu ombay . . . | 2 |
| | Ranbaxy Laboratories, New Delhi . . . | 5 |

TABLE 22.1—*Concld.*

(c) *Manufacturers who undertake sales through distributors and stockists to chemists and druggists*

| Sl No | Name of the manufacturer | Number of distributors | Number of stockists |
|---|---|---|---|
| 1 | Anglo French Co, (Eastern), Bombay. . . | — | 32 |
| 2 | Brahmachari Research Institute, Calcutta . . | 24 (Distributors and stockists) | — |
| 3 | Bayer India Bombay . . . . . . | 18 | 6 |
| 4 | Biological Evans, Hyderabad . . . . | 23 | .. |
| 5 | Burroughs Welcome Bombay . . . | 25 | 2 |
| 6 | British Drug House, Bombay . . . . | 38 | . |
| 7 | Chemo-Pharma Laboratories, Bombay . | 41 (Distributors and stockists) | .. |
| 8 | Ciba of (India), Bombay | 8 | . |
| 9 | Cyanamid, Bombay | 5 | |
| 10 | Hoechst Pharmaceuticals Bombay | 36 | — |
| 11 | Kemp & Co, Bombay . | 21 | |
| 12 | Khandelwal Laboratories, Bombay | 38 | — |
| 13 | Mac Laboratories, Bombay | 12 | .. |
| 14 | Parke-Davis, Bombay . . . . . . | 29 | .. |
| 15 | Gurco Pharma Delhi | 19 | |
| 16 | Lyka Laboratories, Bombay | 10 | 15 |
| 17 | Pharmaceutical Research Laboratories, Madras | 5 | |

22 1.2 Government medical stores supply medicines and drugs to Central hospitals and hospitals under the Employees State Insurance Scheme In their turn these stores invite tenders and rate contracts are entered into at the lowest terms of a full

years supply through the D. G. S. & D. State Governments purchase through tenders or special rate contracts. Most of the manufacturers answer the tenders from the State Governments and hospitals directly. The percentages of sales to Governments as compared to total sales are as follows :

TABLE 22.2

*Sales of basic drugs and formulations to Government as percentages of total sales*

(In lakh Rupees)

| Particulars | 1964 | 1965 | 1966 | 1967 |
|---|---|---|---|---|
| *Basic Drugs* | | | | |
| (i) Sales to Government . | 40 | 40 | 23 | 1·0 |
| (ii) Total sales . . . | 638 | 1,029 | 1,156 | 791 |
| Percentage of (i) to (ii) . | 6 | 4 | 2 | 0·1 |
| *Formulations* | | | | |
| (i) Sales to Government . | 282 | 300 | 488 | 591 |
| (ii) Total sales . . . | 2,070 | 1,773 | 2,682 | 3,008 |
| Percentage of (i) to (ii) . | 14 | 17 | 18 | 20 |

In the case of basic drugs the sales directly made by manufacturers to Government have not been taken into account nor have sales made through the distributors been included. It is, however, very unlikely that the figures so omitted may be significant. In the case of formulations the percentages do not appear to be fully representative, since there is a likelihood that some of the sales may have been made through agents other than formulators. For tenders to Government hospitals and Government Departments are also made by distributors and large dealers. These figures however include particulars of only 51 formulators who have furnished the information to us. The sales of basic drugs by indigenous manufacturers to Government as well as to others during the four years from 1964 to 1967 for each of the units and each of the specified drugs are given in Table 22.3 Sales to Government as well as the total sales by some of the units for the same period of formulations are given in Table 22.4.

TABLE 22 3

*Sales of basic drugs by large scale manufacturers*

Rs in thousands)

| Sl No | Name of the bas c drug and name of manufacturer | 1964 | | | 1965 | | | 1966 | | | 1967 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Value of sales to Govt | Value of sales to others | Value of total sales | Value of sales to Govt | Value of sales to others | Value of to al sales | Val e of sales to Go t | Value of sales to ot ers | Value of total sales | Value of sales to Govt | Value of sales to others | Value of total sales |
| (1 | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| 1 | *V am n—A* | | | | | | | | | | | | |
| | ( ) Glaxo | | 672 | 672 | | 873 | 873 | | 2 134 | 2 134 | | 2 226 | 2 226 |
| | ( ı) Roche Products | | 2 940 | 2 940 | | 3 360 | 3 360 | | 3 347 | 3,347 | | 3 414 | 3 414 |
| | TOTAL | | 3 612 | 3 612 | | 4 233 | 4 233 | | 5 481 | 5 481 | | 5 640 | 5 640 |
| 2 | *V tamin—B 12 and B-12(b)* | | | | | | | | | | | | |
| | ( ) Merck Sharp | | 3 379 | 3 379 | | 4 073 | 4 073 | | 4 674 | 4 674 | | N A | N A |
| | ( ) Glaxo (B12 b) | | | | | | | | 153 | 153 | | 40 | 40 |
| | ( ı) Them s *Pharmaceut cals* | | | | | | | | | | | 121 | 121 |
| | TOTAL | | 3 379 | 3 379 | | 4 073 | 4 073 | | 4 82 | 4 827 | | 161 | 161 |
| 3 | *V am n—C* | | | | | | | | | | | | |
| | Sarabha Merck | 765 | 5 329 | 6 094 | 354 | 7 489 | 7 843 | 397 | 7 777 | 8 174 | 66 | 2 945 | 3 011 |
| | TOTAL | 765 | 5 329 | 6 094 | 354 | 7 489 | 7 843 | 397 | 7 777 | 8 174 | 66 | 2 945 | 3 011 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 *Tetracycl ne* | | | | | | | | | | | | |
| ( ) Synb ot cs | | 2 081 | 2 081 | | 1 695 | 1 695 | | 3 996 | 3,996 | | 1 569 | 1 569 |
| ( ) Cynamid | | 507 | 507 | | 817 | 817 | , | 274 | 274 | | N l | |
| ( ) Pfizer | | 3 899 | 3 899 | | 1 692 | 1 692 | | 235 | 235 | | 241 | 241 |
| TOTAL | | 6 487 | 6 487 | | 4 204 | 4 204 | | 4 505 | 4 505 | | 1 810 | 1 810 |
| 9 *Amod aqu n* | | | | | | | | | | | | |
| Parke-Dav s | | | | | | | | | | | | |
| TOTAL | | | | | | | | | | | | |
| 10 *Ch o oqu n* | | | | | | | | | | | | |
| Bengal Immunity | | 303 | 303 | | 644 | 644 | | 409 | 409 | | 18 | 18 |
| TOTAL | | 303 | 303 | | 644 | 644 | | 409 | 409 | | 18 | 18 |
| 11 (a) *Iodo- hlor hydroxy-quinol ne* | | | | | | | | | | | | |
| ( ) B amachar Resea ch Insti u e | | 22 | 22 | | 21 | 21 | | 21 | 21 | | | |
| ( ) East Ind a Pharmaceut al | 3 230 | | 3 230 | 3 642 | | 3 648 | 1 873 | | 1 873 | | | |
| ( ) A ul Products | | | | | | | | 2 829 | 2 839 | | 1 231 | 1 231 |
| TOTAL | 3 230 | 22 | 3 252 | 3 642 | 21 | 3 669 | 1 873 | 2 850 | 4 733 | | 1 231 | 1 231 |
| (b *D iodo-hyd oxy-qu noline* | | | | | | | | | | | | |
| ( ) Bengal Immun ty | | | | | | | | 0 35 | 0 35 | | | N l |
| ( ) B olog cal Evans | | | | | | | | 58 | 58 | | | |
| ( ) Synb ot cs | | | | | | | | 330 | 330 | | | |
| ( v) Brahamchar Research Inst | | 6 | 6 | | 7 | 7 | | 6 | 6 | | | |
| TOTAL | | 6 | 6 | | 7 | 7 | | 394 | 394 | | | |

## TABLE 22.3—*Contd.*

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 *Sulphadiazine* | | | | | | | | | | | | | |
| (i) Atul Products | | .. | .. | .. | .. | .. | .. | .. | 843 | 843 | .. | .. | .. |
| (ii) May & Baker | | .. | .. | .. | .. | .. | .. | 38 | 31 | 69 | .. | 314 | 314 |
| | TOTAL | .. | .. | .. | .. | .. | .. | 38 | 874 | 912 | .. | 314 | 314 |
| 5 *Penicillin* | | | | | | | | | | | | | |
| (i) Alembic Chemical | | .. | 5,850 | 5,850 | .. | 9,150 | 9,150 | .. | 7,834 | 7,834 | .. | 5,025 | 5,025 |
| (ii) Standard Pharmaceuticals | | .. | 4,945 | 4,945 | .. | 6,226 | 6,226 | .. | 9,442 | 9,442 | .. | 2,856 | 2,856 |
| (iii) Hindustan Antibiotics | | .. | 7,706 | 7,706 | .. | 25,830 | 25,830 | .. | 28,111 | 28,111 | .. | 20,515 | 20,515 |
| | TOTAL | .. | 18,501 | 18,501 | .. | 41,206 | 41,206 | .. | 45,387 | 45,387 | .. | 28,396 | 28,396 |
| 6 *Streptomycin* | | | | | | | | | | | | | |
| (i) Hindustan Antibiotics | | .. | 4,401 | 4,401 | .. | 8,737 | 8,737 | .. | 10,534 | 10,534 | .. | 8,545 | 8,545 |
| (ii) Synbiotics | | .. | 260 | 260 | .. | 9,896 | 9,896 | .. | 9,203 | 9,203 | .. | 17,866 | 17,866 |
| | TOTAL | .. | 4,661 | 4,661 | .. | 18,633 | 18,633 | .. | 19,737 | 19,737 | .. | 26,411 | 26,411 |
| 7 *Chloramphenicol* | | | | | | | | | | | | | |
| Boehringer-Knoll | | .. | 1,745 | 1,745 | .. | 3,173 | 3,173 | .. | 1,863 | 1,863 | .. | 360 | 360 |
| | TOTAL | .. | 1,745 | 1,745 | .. | 3,173 | 3,173 | .. | 1,863 | 1,863 | .. | 360 | 360 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 *Tetracycl ns* | | | | | | | | | | | |
| ( ) Synb ot cs | | 2 081 | 2 081 | | 1 695 | 1 695 | | 3 996 | 3 996 | 1 569 | 1 569 |
| ( ) Cynam d | | 507 | 507 | | 817 | 817 | | 274 | 274 | N 1 | |
| ( ) Pfizer | | 3 899 | 3 899 | | 1 692 | 1 692 | | 235 | 235 | 241 | 241 |
| TOTAL | | 6 487 | 6 487 | | 4 204 | 4 204 | | 4 505 | 4 505 | 1 810 | 1 810 |
| 9 *Amodiaqun* | | | | | | | | | | | |
| Parke Dav s | | | | | | | | | | | |
| TOTAL | | | | | | | | | | | |
| 10 *Chloroqu n* | | | | | | | | | | | |
| Bengal Immunity | | 303 | 303 | | 644 | 644 | | 409 | 409 | 18 | 18 |
| TOTAL | | 303 | 303 | | 644 | 644 | | 409 | 409 | 18 | 18 |
| 11 (a) *Iodo-chlor-hydroxy quinol ne* | | | | | | | | | | | |
| ( ) B amachar Research Instu u e | | 22 | 22 | | 21 | 21 | | 21 | 21 | | |
| ( ) East Ind a Pharmaceu cal | 3 230 | | 3 230 | 3 642 | | 3 648 | 1 873 | | 1 873 | | |
| ( ) A ul Products | | | | | | | | 2 829 | 2 839 | 1 231 | 1 231 |
| TOTAL | 3 230 | 22 | 3 252 | 3 642 | 21 | 3 669 | 1 873 | 2 850 | 4 733 | 1 231 | 1 231 |
| (b) *D iodo-hydroxy-qu noline* | | | | | | | | | | | |
| ( ) Bengal Immun ty | | | | | | | | 0 35 | 0 35 | | N 1 |
| ( ) B olog cal Evans | | | | | | | | 58 | 58 | | |
| ( ) Synb ot cs | | | | | | | | 330 | 330 | | |
| ( v) Brahamchari Research Inst | | 6 | 6 | | 7 | 7 | | 6 | 6 | | |
| TOTAL | | 6 | 6 | | 7 | 7 | | 394 | 394 | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 *P ▲ $* | | | | | | | | | | | | |
| ( ) B olog cal Evans | | 1 290 | 1 290 | | 730 | 730 | | 1 43, | 1 435 | | | |
| ( ) Wa der Pharmed | | 284 | 284 | | 2 857 | 2 857 | | 1 554 | 1 554 | | 2 474 | 2 474 |
| ( ) Pfizer | | | | | | | | 197 | 197 | | 243 | 243 |
| TOTAL | | 1 574 | 1 574 | | 3 587 | 3 587 | | 3 186 | 3 186 | | 2 417 | 2 417 |
| 17 *Te anus Ant oxin* | | | | | | | | | | | | |
| Bengal Immun y | | 6 541 | 6 541 | | 4 059 | 4 059 | | 3 502 | 3 502 | | 2 473 | 2 473 |
| TOTAL | | 6 541 | 6 541 | | 4 059 | 4 059 | | 3 502 | 3 502 | | 2 473 | 2 473 |
| 18 *Predni o one* | | | | | | | | | | | | |
| ( ) Merck S a p | | 1 207 | 1 207 | | 131 | 131 | | 15 | 15 | | | |
| ( ) G axo Labs | | 1 055 | 1 055 | | 803 | 803 | | 128 | 128 | | 36 | 36 |
| ( ) Wyeth Labs | | 1 426 | 1 426 | | 3 406 | 3 406 | | 6 600 | 6 600 | | 5 346 | 5 346 |
| TOTAL | | 3 688 | 3 688 | | 4 340 | 4 340 | | 6 738 | 6 738 | | 5 382 | 5 382 |
| GRAND TOTAL | 3 995 | 59 766 | 63 761 | 4 002 | 98 887 | 1 02,889 | 2 303 | 1 13 294 | 1 15 602 | 66 | 78 999 | 79 065 |

# TABLE 22.4

## *Total value of sales by formulators*

(Rs. in '000)

| Sl. No. | Name of the formulator | Government sales | | | | Non-Government sales | | | | Total sales | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1964 | 1965 | 1966 | 1967 | 1964 | 1965 | 1966 | 1967 | 1964 | 1965 | 1966 | 1967 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 1 | Alembic Chemical | .. | .. | .. | .. | .. | .. | .. | .. | 19,407 | 21,638 | 21,389 | 28,205 |
| 2 | Anglo-French | .. | .. | .. | .. | .. | .. | .. | .. | 1,003 | 1,683 | .. | .. |
| 3 | Bayer | 10 | 25 | .. | 2 | 238 | 227 | .. | 543 | 248 | 262 | .. | 545 |
| 4 | Bengal Chemical | .. | .. | .. | .. | .. | .. | .. | .. | 457 | 397 | 451 | 262 |
| 5 | Biological Evans | .. | .. | .. | .. | .. | .. | .. | .. | .. | 11,045 | 1,462 | .. |
| 6 | Boehringer-Knoll | .. | .. | 1,556 | 697 | .. | .. | 2,237 | 2,149 | .. | .. | 3,793 | 2,846 |
| 7 | Boots | .. | 27 | 343 | 396 | 1,742 | 1,426 | 2,259 | 3,029 | 1,742 | 1,453 | 2,602 | 3,425 |
| 8 | British Drug House | .. | .. | .. | .. | .. | .. | .. | .. | 1,518 | 1,201 | 1,383 | 1,013 |
| 9 | Burroughs Welcome | .. | .. | .. | .. | .. | .. | .. | .. | 827 | 1,245 | 1,165 | 696 |
| 10 | Chemo-Pharma | .. | .. | 24 | 121 | .. | .. | 11 | 1 | .. | .. | 35 | 122 |
| 11 | Ciba | .. | .. | 329 | 291 | .. | .. | 2,407 | 2,632 | 2,763 | 2,863 | 2,736 | 2,923 |
| 12 | Crookes Interfran | .. | .. | .. | .. | .. | .. | .. | .. | 904 | 679 | 1,786 | 1,251 |
| 13 | Cyanamid | 1,141 | 1,215 | 1,920 | 2,727 | 9,972 | 11,632 | 14,287 | 12,869 | 11,113 | 12,847 | 14,289 | 15,596 |
| 14 | Dey's Medical | 4,470 | .. | .. | .. | 5,019 | .. | .. | .. | 9,489 | 8,020 | .. | .. |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | East Ind a Pharmace t cal | | | 1 643 | 1 698 | | | 4 251 | 4 274 | | | 5 895 | 5 972 |
| 16 | Fa rdeal Corpn | | | | | | | | | 140 | 253 | 172 | |
| 17 | Geoffrey Manners | | | 20 | 26 | | | 391 | 331 | 509 | 525 | 411 | 537 |
| 18 | Glaxo Labs | | | | | | | | | 21 349 | 23 525 | 22 855 | 22 501 |
| 19 | H ndusta : Ant b ot c | 18 724 | 23 705 | 26 071 | 32 958 | 1 694 | 1 583 | 1 729 | 3 858 | 20 418 | 24 794 | 27 800 | 36 816 |
| 20 | Hoecht | | | | | | | | | | | 160 | 110 |
| 21 | Ind an Health Inst tute | | | | | | | | | 1 470 | 1 937 | 44 | 56 |
| 22 | Ke up & Co | 33 | | | | 92 | | | | 125 | | | |
| 23 | Mac Labs | ?5 | 3 | | | 2 873 | 2 997 | | | 2 900 | 3 000 | 1 200 | |
| 24 | Mart n & Harr s | | | 22 | 76 | | | 55 | 30 | | | 77 | 106 |
| 25 | May & Baker . . | | | 38 | | | | 31 | 314 | | | 69 | 314 |
| 26 | Merck Sharp | | | 1 858 | 5 535 | | | 7 709 | 6 428 | | | 9 565 | 11 963 |
| 27 | Neo P iarma | 335 | 714 | 1 229 | 1 585 | 1 705 | 1 451 | 2 702 | 3 327 | 2 040 | 2 165 | 3 431 | 4 912 |
| 28 | Pa ke Davis | 907 | 227 | 1 818 | 1 315 | 7 923 | 8 789 | 17 064 | 16 941 | 8 830 | 9 303 | 18 88? | 18 256 |
| 29 | Pfizer | 956 | 1 652 | 11 035 | 10 276 | 4 013 | 4 774 | 36 726 | 34 582 | 4 969 | 6 426 | 47 761 | 44 857 |
| 30 | Rall s | 60 | 75 | 124 | 199 | 32 | 4 | 30 | 32 | 92 | 79 | 654 | 231 |
| 31 | Roche Products | | | | • | • | | | | 3 570 | 4 380 | 3 838 | 3 944 |
| 32 | Sarabhai Chem cals | • | • | | • | | | | | 69 276 | 9 845 | 60 139 | 76 391 |
| 33 | Sm th Stan street | 537 | 802 | 76 | 302 | 2 507 | 3 321 | 317 | 364 | 3 044 | 4 123 | 393 | 666 |
| 34 | Spencer | 10 | 3 | | | 66 | 53 | | | 76 | 56 | 49 | 3 |
| 35 | Standard Pha maceut cals | | | 200 | | 219 | 1 320 | 950 | | 1 531 | 1 624 | 1 150 | |
| 36 | Stadmed | 78 | 55 | | 53 | 3 993 | 4 110 | | 3 181 | 4 071 | 4 165 | | 3 233 |
| 37 | Therapeu c Pharmaceut cals | 761 | 986 | | | 1 989 | 2 515 | | | 2 750 | 3 501 | | |

TABLE 22.4—*Contd.*

(Rs. in '000)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 38 | U. S. Vitamin | .. | .. | .. | .. | .. | .. | .. | .. | 2,193 | 3,094 | 1,700 | .. |
| 39 | Wyeth Labs. | 13 | 349 | 166 | 139 | 819 | 849 | 1,025 | 1,616 | 832 | 1,198 | 1,191 | 1,755 |
| 40 | Zandu | .. | 45 | 31 | 60 | 479 | 436 | 568 | 632 | 479 | 481 | 599 | 692 |
| 41 | Binichem | .. | .. | .. | .. | .. | .. | .. | .. | 750 | 900 | 900 | 500 |
| 42 | Glucodex | .. | .. | 242 | 625 | .. | .. | 123 | 100 | .. | .. | 365 | 725 |
| 43 | Gurco Pharma | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1,740 | .. | 1,220 |
| 44 | Laboratories Grimault | .. | .. | .. | .. | .. | .. | .. | .. | 1,014 | 1,455 | .. | .. |
| 45 | Lyka Labs. | .. | .. | .. | .. | .. | .. | .. | .. | 3,785 | 3,403 | 5,415 | 5,223 |
| 46 | Neil Pharmaceuticals | 120 | 102 | 150 | .. | 40 | 43 | 50 | .. | 160 | 145 | 200 | .. |
| 47 | Pharma-Products | .. | .. | .. | .. | .. | .. | .. | .. | 111 | 151 | 134 | 145 |
| 48 | Pharma Medico | .. | .. | .. | .. | .. | .. | 760 | 1,092 | 752 | 1,151 | 760 | 1,092 |
| 49 | Retort Labs. | .. | .. | .. | .. | .. | .. | .. | .. | 693 | 871 | 946 | 1,272 |
| 50 | Sunny Industries | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 163 | 198 |
| 51 | Smith Pharma | .. | .. | .. | 2 | 30 | 103 | 152 | 258 | 30 | 103 | 152 | 260 |
| | Total | 28,180 | 29,985 | 48,793 | 59,083 | 45,447 | 45,689 | 95,334 | 98,782 | 2,06,967 | 1,77,320 | 2,68,154 | 3,00,863 |

22 1 3 It has been suggested that the purchases of State Governments also should be made on country-wide basis through D G S & D in order to ensure uniformity as well as the right quality of drugs The attention of the State Governments as well as of the Government of India is drawn to this suggestion

22 1 4 The formulators of basic drugs have advocated the adoption of the system of sales direct to the formulators instead of through sole distributors or selling agents Since the number of formulators is not very large this suggestion is commended for the attention of the manufacturers of basic drugs

## 22 2 Sales Promotion :

22 2 1 The manufacturers of drugs have stressed that the normal means of mass communication are not sufficient for the drug industry as pharmaceutical products have to pass through the medical profession before they could reach the hands of the consumers They contend that they have to incur considerable expenditure to introduce their products and promote their sales

and in these as well as elsewhere for the remaining The salesmen travel extensively from town to town and village to village meeting the practising doctors, call at hospitals and explain the value of the drugs and supply literature and free samples The quantum of amount spent on sales promotion cannot be related to the total turnover of a particular unit or even that of the industry but is related to the particular group of drugs to which it relate For the outlay on promotion or development is related to specific groups of medicines the use of which is not interchangeable In U K the number of doctors is about 50,000 and the promotion costs work out to Rs 2,773 per doctor On the other hand there are about 100,000 registered medical practioners in India and other with medical degrees and the average promotion costs comes to Rs 409 20 per doctor which is almost 1/7th of the figures for the U K costs and compares with the ratio of per capita cost of drugs in the two countries It has been argued that it is unlikely that units of the private sector which have profits as their primary aim would wish to spend more on sales promotion than is necessary for the performance of their organisation Information received from the formulators on the amount annually spent by them on (1) their sales promotion departments (supply of free samples and free literature) and (2) items like advertisement,

price competition and special incentives is given in Table 22.5 in respect of the units which have furnished the relevant information to us. Very scanty information could be obtained from the small scale units and it has not been included.

22.2.2. A sample survey conducted by the OPPI gives the following figures as percentage spent on sales promotion to total sales.

| | Per centage |
|---|---|
| Medical representation | 5·93 |
| Direct | 1·36 |
| Advertisement in medical charges | 0·82 |
| Cost of samples | 2·46 |
| Other promotional activities | 1·83 |
| TOTAL | 12·40 |

The percentage worked out on the basis of the samples in Table 22.5 comes to 9.6 percent.

# Table 22.5

*Total sales of farmulators and their annual expenditure on sales and sales promotion*

(Rs n thousands)

| Sl No | Name of the Un t | Year to wh ch expend ture relates | To al sales of the company n that year | Expend ture on sales promot on Department | | | | | Other expend ture on sales | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Staff | Free Samples | Free l te a ture | Total | Per cen tage of Col 8 to Col 4 | Adver t se ments | pr ze co npe t ons | Spec al ncen ves | Total | Per cen age of Col 13 to Col 4 | Grand Total (Col 8+ Col 13) | Per cen tage of Col 15 to Col 4 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 1 | Alemb c Chem cal | 1966 | 62 700 | 2 508 | 1 881 | 314 | 4 703 | 7 1 | 1 566 | N l | 25 | 1 591 | 2 5 | 6 294 | 10 0 |
| 2 | Anglo French | 1965 | 9 393 | 842 | 239 | 189 | 1 270 | 13 5 | 12 | | 75 | 87 | 0 01 | 1 357 | 13 5 |
| 3 | Bayer | 1965-66 | 12 500 | 350 | 175 | 100 | 625 | 4 8 | 18 | | N l | 18 | 0 1 | 63 | 5 0 |
| 4 | B o ogical Evans | 195 | 12 100 | 473 | 283 | 103 | 859 | 7 1 | 5 | | 5 | 10 | 0 04 | 869 | 7 1 |
| 5 | Bur oughs We lcome | 1965 66 | 14 500 | 901 | 112 | 174 | 1 187 | 8 2 | 510 | | 187 | 697 | 4 8 | 1 884 | 13 0 |
| 6 | B sh D ug House | 1966 | 21 700 | 1 204 | 73 | 217 | 1 634 | 8 7 | 126 | | 58 | 184 | 0 8 | 2 078 | 9 6 |
| 7 | Boch nger Kno l | 1965 66 | 15 500 | 1 320 | 748 | 314 | 2 412 | 15 6 | 377 | | 317 | 694 | ? 0 | 3 106 | 20 0 |
| 8 | Boots | 19 5 | 2 10 | 644 | 93 | 47 | 784 | 3 9 | 666 | | 150 | 816 | 4 1 | 1 600 | 8 0 |
| 9 | Bengal Imm n y | 19 5 66 | 2 400 | 1 12 | 1 120 | 332 | 2 63 | 11 7 | 425 | | 1 120 | 1 545 | 6 9 | 4 177 | 18 6 |
| 10 | C ba | 1965 | 69 943 | 1 696 | 1 032 | 127 | 2 855 | 7 2 | 53 | | 197 | 250 | 0 6 | 3 105 | 7 8 |
| 11 | Chemo P a ma | 1965 | 6 500 | 406 | 310 | 140 | 816 | 13 0 | 40 | | 50 | 90 | 1 4 | 936 | 14 4 |

TABLE 22.5—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | CIPLA | 1965-66 | 8,600 | 700 | 213 | 70 | 1,013 | 11.8 | 60 | ,, | 73 | 133 | 1.5 | 1,146 | 13.3 |
| 13 | Cyanamid | 1961-65 | 11,200 | 1,063 | 1,351 | 529 | 3,713 | 9.1 | 100 | ,, | 217 | 117 | 0.8 | 4,090 | 9.9 |
| 14 | East India Pharmaceutical. | 1965 | 23,700 | 1,500 | 500 | 350 | 2,350 | 9.9 | 670 | ,, | 110 | 780 | 3.2 | 3,130 | 13.2 |
| 15 | Fairdeal Corpn. | 1965-66 | 2,900 | 8 | 108 | 11 | 147 | 5.1 | 9 | ,, | 25 | 34 | 0.1 | 181 | 5.2 |
| 16 | Glaxo Labs. | 1966 | 1,64,600 | 1,150 | 700 | 680 | 730 | 2.1 | 173 | ,, | 8,230 | 8,103 | 5.1 | 12,933 | 7.9 |
| 17 | Geoffrey Manners | 1965-66 | 56,111 | 600 | 250 | 11 | 891 | 1.8 | 6 | ,, | 57 | 63 | 0.1 | 954 | 31.7 |
| 18 | Hindustan Antibiotics | 1965-66 | 53,900 | 211 | 16 | Neg. | 227 | 0.12 | 110 | ,, | Nil | 110 | 0.2 | 337 | 0.62 |
| 19 | Hoechst | 1965 | 42,300 | 217 | 1,922 | 173 | 2,912 | 7.0 | 79 | ,, | 199 | 578 | 1.4 | 3,520 | 8.3 |
| 20 | Merck Sharp | 1965-66 | 31,300 | 1,748 | 285 | 552 | 2,585 | 8.3 | 37 | Nil | 968 | 1,005 | 3.2 | 3,590 | 11.5 |
| 21 | Mac Labs. | 1965-66 | 4,100 | 162 | 100 | 33 | 295 | 7.2 | 53 | 8 | 50 | 111 | 2.7 | 406 | 9.9 |
| 22 | May & Baker | 1965-66 | 33,100 | 1,018 | 592 | 682 | 3,092 | 9.3 | 12 | Nil | Nil | 12 | 0.1 | 3,134 | 9.1 |
| 23 | Neo Pharma | 1966 | 12,000 | 885 | 368 | 58 | 1,311 | 10.9 | 37 | 9 | Nil | 16 | 0.4 | 1,357 | 11.3 |
| 24 | Parke-Davis | 1965-66 | 52,700 | 2,811 | 733 | 1,004 | 4,578 | 8.7 | 816 | 24 | 132 | 1,002 | 1.9 | 5,580 | 10.6 |
| 25 | Pfizer | 1965-36 | 1,27,000 | 7,105 | 2,113 | 777 | 9,095 | 7.9 | 262 | Nil | 150 | 412 | 0.3 | 10,107 | 8.2 |
| 26 | Roche Products | 1966 | 31,300 | 803 | 395 | Nil | 1,198 | 3.8 | 1,819 | Nil | 1,019 | 2,867 | 9.2 | 4,065 | 12.9 |
| 27 | Standard Pharmaceuticals | 1965-66 | 18,200 | 110 | 173 | 75 | 958 | 5.3 | 50 | 14 | 60 | 124 | 0.7 | 1,082 | 5.9 |
| 28 | Smith Stanistreet | 1965-66 | 9,930 | 718 | 295 | 58 | 1,001 | 10.1 | 839 | 3 | 360 | 1,202 | 12.1 | 2,803 | 28.2 |
| 29 | Sarabhai Chemicals | 1965-66 | 1,16,000 | 5,223 | 2,909 | 1,032 | 9,164 | 7.9 | 1,685 | Nil | 8,700 | 10,385 | 9.00 | 19,519 | 16.9 |
| 30 | Stadmed | 1966-67 | 4,523 | 137 | 279 | 129 | 815 | 10.7 | Nil | Nil | Nil | Nil | .. | 815 | 18.7 |
| 31 | Unichem Labs. | 1965-66 | 22,000 | 786 | 1,100 | Nil | 1,888 | 8.6 | 721 | 11 | 107 | 812 | 3.8 | 2,728 | 12.4 |
| 32 | U. S. Vitamin | 1965-66 | 3,973 | 390 | 158 | 99 | 647 | 16.3 | 10 | 8 | 34 | 52 | 3.1 | 699 | 17.6 |
| 33 | Wyeth Labs. | 1965-66 | 12,300 | 223 | 268 | 137 | 628 | 5.1 | 4 | Nil | 4 | 8 | 0.1 | 696 | 5.2 |
| 34 | Zandu | 1965-66 | 11,514 | 276 | 115 | Nil | 391 | 3.1 | 115 | Nil | Nil | 115 | 1.0 | 506 | 1.4 |
| | | | 11,50,895 | 43,598 | 21,729 | 9,257 | 71,584 | 6.5 | 11,518 | 77 | 23,018 | 31,613 | 3.0 | 109,227 | 9.6 |

22 2 3 Analysed by the proportion which the expenditure on sales promotion bears to the total turnover of the unit in a given year the position is as follows

| | |
|---|---|
| Units whose expenditure on sales promotion was between 20 and 25 per cent | 2 |
| Units whose expenditure on sales promotion was between 15 and 20 per cent | 4 |
| Units whose expenditure on sales promotion was between 10 and 15 per cent | 11 |
| Units whose expenditure on sales promotion was between 5 and 10 per cent | 14 |
| Units whose expenditure on sales promotion was between 0 and 5 per cent | 3 |
| TOTAL | 34 |

A large number of units fall within the range of expenditure between 5 and 15 per cent

22 2 4 Advertising promotion of drugs has been a controversial issue for a long time Since ethical drugs are not sold directly to the public and are sold only on the prescription of doctor the manufacturers have necessarily to approach the prescribing doctors so far as promotion of these drugs is concerned For the rest the normal channels of advertising are used It has been alleged that sales promotion tends to invest drugs of particular brand names with attributes and qualities which they do not in reality possess and therefore mislead the doctors The amount of expenditure on such sale promotion is also considerable in certain cases In U S A some years ago in the course of the inquiry known as the Kefauver Inquiry it was found that about 24 per cent of the turnover was spent on sales promotion which was the largest single item on the cost of drugs, the cost of the materials being only a little more than 32 per cent research and development six per cent general administration 11 per cent, taxes 13 per cent and net profit after taxes 13 per cent The constant stream of literature published and distributed amongst medical practitioners is also said to a large extent to be a waste since it is more often than not repetitive and is not even read With the sole object of promoting the sales of a particular drug all the techniques of normal advertising are used without adequate realisation of the fact that even a slight departure from truthfulness is likely to result in great potential harm to the patient if

the doctors were to be gulliable and go by the extravagant and dramatic claims made. It has been urged that free supplies of samples to medical profession leads to unhealthy competition. Some State Drugs Controllers have said that restrictions should be imposed on the supply of sample of drugs which have been in use for five years as no useful purpose is served in giving a large number of samples of well-known medicines. The Director, Drugs Control Administration, Maharashtra has added that a certain ceiling should be fixed for expenditure on sales promotion by making necessary provisions in the form of a suitable legislation. The practice of free supply of medicines gives rise to unhealthy competition amongst manufacturers who try to vie with each other in obliging the medical profession with a view to obtain its support. The State Drugs Controller for Mysore has also advocated a ceiling for the distribution of samples in the interests of reduction of ultimate cost of the product and has suggested that less amount be spent on literature, etc. We consider that sales promotion may be considered unobjectionable in the case of new drugs provided that no unsubstantiated claims are made but that it should not be as relentless as it appears to be at the present moment in the case of already well established drugs and that in any case the total expenditure on sales promotion should not exceed ten per cent of the *ex*-factory cost of the drug. In determining the fair prices of formulations we have made suitable adjustments on these lines.

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CHAPTER 23

# CHARACTERISTICS OF THE INDUSTRY, NATURE OF INVESTMENT AND COLLABORATION :

## 23 1 Characteristics of the industry—Distribution by size nature of investment and turnover

23 1 1 It has already been mentioned that there are 118 units registered or licensed with the D G T D and that there are 2131 units in the small scale sector licensed by State Drugs Controllers making a total of 2249 units which manufacture basic drugs and formulations There are certain special features of the industry in India which need to be mentioned Even in the case of the organised sector the largest Indian companies are small compared to European or American companies The smallest Vitamin A plant in those countries has a capacity of at least five times the size of the largest plant in India In Europe and U S an economic size unit is twenty times that of the largest in India In U S S R the standard size of a unit is about ten times that of the largest unit in India In the case of Tetracycline, fermentation vessels in India are of 6 000 U S gallons In other countries the minimum capacity is considered to be 12,000 gallons In larger plants those of 25 000 U S gallons and over are used and the economic size of the fermentation plant is regarded as that of 50 tonnes a year The plants in our country are those with a capacity of 5 or 10 tonnes In a glass lined reaction vessel of 100 gallons for the production of Chlorpropamide the batch size is 40 to 50 kilograms and in spite of this diminutive size the licensed capacity of one and half tonnes can be produced in a month For economic operations it is considered that demand should be at least fifteen tonnes as against the country's requirement of five tonnes In the case of antibiotics the capacity of a unit in India is about one tonne per month while in the U S A it is about 12 tonnes The lot size is 100 kilogrammes in India while it is 1140 kilogram in the U S The basic vessel size is about 500 kilogram in India while it is 3 500 kilograms in the U S A In the case of anti malarials, the capacity of a plant operating in the U S A is 4800 kilograms per month as against those of 2500 kilogram in India The difference in lot size is *about 1200 a against 500 kilograms in India and the basic vessel* size is 500 kilograms in India and double this capacity in the U S A

23.1.2. The drug industry is by and large international and some of the largest units operate in many countries in the world. Even in U. K. there is a large number of units which are foreign owned. In that country in 1964, 53 per cent of the market share was held by U. S. based companies, 12 per cent by Swiss firms, 8 per cent by other foreign organisations and only 27 per cent by indigenous ones. Canada's foreign subsidiaries supply almost the whole drug market and 80 per cent of companies are foreign owned. Compared to U. K. there is lower incidence of foreign ownership of pharmaceutical firms in India. Another characteristics of the industry is that owing to competition by product substitution and not by price cutting the units have to keep themselves on their toes and to concentrate on the production of innovations even if those are in the nature of what is known as molecule manipulations. Compared to other leading drug manufacturing countries in the world the number of units in our country is very large, particularly because of the existence of a very large number of small scale units. In the case of the small scale units it has been argued that the standards achieved by them are not likely to be satisfactory or uniform. We have not been able to get a break up of substandard drugs found in the course of inspections undertaken by Government Inspectors which came from the small scale units. Our attention has however been drawn to para 3.3.1 of the Report on the Committee on Drugs Control (1966) which relates to the working conditions of small scale units and is reproduced below :—

> "3.3.1. By far and large the smaller units being housed in residential buildings are not designed with necessary layout for pharmaceutical manufacture. The uniflow is a very desirable feature in manufacture and it is not possible to achieve this in the existing premises. Some of the units have, no doubt, put up properly planned and good buildings for the purpose, while there were others which were housed in dilapidated structures. Except in a few units, attention was not paid to the hygienic conditions in the plants as well as in the surrounding areas. Even in respect of the condition of the buildings and hygienic conditions one would clearly observe the difference in the units located in States where there was adequate machinery for enforcement with proper supervision and States there this was lacking."

23.1.3. Of the 118 units in the large scale sector, 62 manufacture the specified basic drugs or their formulations and of the 2131 units in the small scale sector there are 391 units manufacturing basic drugs or formulations under inquiry. Very little data if at all are available with regard to the investment, turnover

and profitability of the small scale sector and if any estimates are attempted these would largely be conjectural Of the 62 units in the large scale sector complete data are available only for 40 units and it is proposed to base these analyses on the available material It is fairly representative since almost all the larger units are included Particulars of employed capital as well as turnover are indicated in Table 23 1 in order of the volume of the employed capital.

TABLE 23 1

*Selected units in the organised sector and their investment and turnover*

| Sl No. | Name of the Unit | Year | Average capital employed (Lakh Rs ) | Paid up capital (Lakh Rs ) | Sales (Lakh Rs ) | Percentage of sales to employed capital |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Atul Products | 1967 | 1370 | 200 | 728 | 53 |
| 2 | Galxo Labs . | 1966 67 | 1066 | 300 | 1645 | 154 |
| 3. | Ciba . . . | 1967 | 779 | 325 | 994 | 128 |
| 4 | Hindustan Antibiotics . | 1966 67 | 730 | 247 | 717 | 98 |
| 5 | Sarabhai Chemicals . | 1965-66 | 636 | 178 | 1160 | 182 |
| 6. | Pfizer . . . . | 1965-66 | 537 | 248 | 1270 | 236 |
| 7. | Alembic Chemical . | 1966 | 440 | 208 | 627 | 143 |
| 8 | Hoechst . . . | 1966 | 355 | 63 | 491 | 138 |
| 9. | May & Baker . . | 1966-67 | 322 | 253 | 383 | 119 |
| 10. | Synbiotics . . | 1966-67 | 271 | 75 | 192 | 71 |
| 11. | Roche Products . | 1966 | 258 | 100 | 331 | 128 |
| 12 | Parke-Davis . | 1965-66 | 249 | 105 | 527 | 212 |
| 13. | Merck Sharp . | 1965-66 | 245 | 180 | 313 | 128 |
| 14. | Bayer . . . | 1966 | 240 | 265 | 125 | 52 |
| 15. | Bengal Chemical . . | 1966 67 | 195 | 80 | 296 | 152 |
| 16. | Sarabhai Merck | 1966 67 | 178 | 17 | 233 | 131 |
| 17. | Cyanamid | 1965-66 | 192 | 70 | 504 | 262 |
| 18 | Haffkine . / . | 1965-66 | 155 | 162 | 78 | 50 |
| 19 | Wyeth Labs . . | 1965-66 | 152 | 75 | 123 | 81 |

TABLE 23.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 20 | Standard Pharmaceuticals . . . . | 1966-67 | 143 | 43 | 228 | 159 |
| 21 | Bechniger-knoll . . | 1965-67 | 114 | 35 | 155 | 136 |
| 22 | Boots . . . . . | 1966 | 130 | 42 | 218 | 168 |
| 23 | Dey's Medical . . | 1966 | 119 | 15 | 431 | 362 |
| 24 | Unichem Labs. . . | 1965-66 | 98 | 45 | 220 | 224 |
| 25 | Burroughs Wellcome . | 1965-66 | 89 | 50 | 145 | 163 |
| 26 | Calcutta Chemical . | 1965-66 | 80 | 20 | 275 | 344 |
| 27 | Bengal Immunity . . | 1965-66 | 75 | 26 | 224 | 299 |
| 28 | Geoffrey Manners . | 1966 | 72 | 32 | 488 | 678 |
| 29 | Biological Evans . . | 1966 | 73 | 28 | 121 | 166 |
| 30 | East India Pharmaceutical | 1966 | 49 | 24 | 263 | 537 |
| 31 | Neo-Pharma . . | 1966 | 50 | 12 | 120 | 240 |
| 32 | Chemo-Pharma . . | 1966 | 50 | 20 | 69 | 138 |
| 33 | Mac Labs. . . . | 1965-66 | 32 | 5 | 41 | 128 |
| 34 | Wander Pharmed . . | 1966 | 26 | 10 | 20 | 77 |
| 35 | Bio-chemical & synthetic | 1966 | 19 | 8 | 7 | 37 |
| 36 | Albert David . . | 1965-66 | 15 | 15 | 60 | 400 |
| 37 | Brahmachari Research Inst. . . . . | 1965-66 | 10 | 3 | 26 | 260 |
| 38 | Fair Deal Corporation . | 1965-66 | 10 | 7 | 29 | 290 |
| 39 | U. S. Vitamin . . | 1964-65 | 8 | 3 | 28 | 350 |
| 40 | Cilag-Hind . . . | 1965 | 8 | 5 | 26 | 325 |
| | TOTAL . | | 9640 | 3599 | 13935 | 1457 |

NOTE.—In the case of units at Sl. Nos. 1 (Atul products), 3 (Ciba) and 28 (Calcutta chemical) the higher activity is not in the specified drugs and pharmaceuticals.

23.1.4. Of the 40 units data for which have been given in Table 23.1 as many as 15 have major equity participation of foreign capital and four among them are entirely foreign owned.

23 1.5 The distribution of these 40 units by the range of employed capital is as follows —

TABLE 23 2

*Pattern of foreign capital participation*

(Amount in lakh Rs)

| Range of employed capital | Entirely foreign owned | | With major foreign equity participation | | With 50 per cent foreign equity participation | | With minor foreign equity participation | | Entirely Indian owned | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No | Amount of foreign capital | No | Amount of foreign capital | No | Amount of foreign capital | No | Amount of foreign capital | No | Amount of foreign capital |
| Over 1000 | 1 | 300 | | | | | | | 1 | |
| 501—1000 | | | 2 | 411 | | | | | 2 | |
| 401—500 | | | | | | | | | 1 | |
| 301—400 | 1 | 253 | | | 1 | 32 | | | | |
| 201—300 | | | 5 | 472 | | | 2 | 36 8 | | |
| 101—200 | 1 | 42 | 1 | 56 | | | 1 | 6 | 5 | |
| 51—100 | 1 | 89 | 1 | 25 | | | 3 | 28 4 | 2 | |
| 26—50 | | | 1 | 5 5 | | | 1 | 0 2 | 1 | |
| 1—25 | | | 1 | 3 | 1 | 1 | | | 4 | |
| TOTAL | 4 | 684 | 11 | 972 5 | 2 | 33 | 7 | 71 4 | 16 | |

The entirely Indian owned companies as well as certain other units which have foreign equity participation in capital have entered into foreign collaboration, particulars of which are *given in the following paragraph.*

## 23 2 Collaboration for manufacture and formulation of specified drugs:

23 2 1 For the purpose of the present inquiry, we have examined the foreign collaborations of companies engaged in the manufacture and/or formulation of the specified drugs The following

table shows for each specified drug, the number of producers who have foreign collaboration and also the countries with which they collaborate.

TABLE 23.3

*Extent and pattern of foreign collaboration for the specified basic drugs*

| Basic drugs for which collaborating | Total No. of units in production | No. of units with foreign collaboration | Their distribution, according to the countries with which collaborating | | | | |
|---|---|---|---|---|---|---|---|
| | | | U.K. | U.S.A. | Switzerland | West Germany | Italy |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| *Vitamins :* | | | | | | | |
| 1. Vitamin-A | 2 | 2 | 1 | .. | 1 | .. | .. |
| 2. (a) Vitamin-B12 | 1 | 1 | .. | 1 | .. | .. | .. |
| (b) Vitamin-B12(b) | 2 | 2 | 1 | 1 | .. | .. | .. |
| 3. Vitamin-C | 1 | 1 | .. | .. | .. | 1 | .. |
| *Sulpha Drugs :* | | | | | | | |
| 4. Sulphadiazine. | 2 | 2 | 1 | .. | 1 | .. | .. |
| *Antibiotics :* | | | | | | | |
| 5. Penicillin | 3 | .. | .. | .. | .. | .. | .. |
| 6. Streptomycin | 2 | 2 | .. | 2 | .. | .. | .. |
| 7. Chloramphenicol | 3 | 3 | .. | 1 | .. | 1 | 1 |
| 8. Tetracyclines | 4 | 3 | .. | 3 | .. | .. | .. |
| *Anti-Malarials :* | | | | | | | |
| 9. Amodiaquin | 2 | 1 | .. | .. | .. | .. | .. |
| 10. Chloroquin | 2 | .. | .. | .. | .. | .. | .. |

TABLE 23 3—*Contd*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| *Anti Disentric* | | | | | | | |
| 11 (a) Iodo-chlorhyd droxy-qui noline . | 6 | 1 | .. | | 1 | | |
| (b) D-Iodo hydroxy qu nol ne | 9 | 1 | 1 | | | | |
| *Anti Diabetics* | | | | | | | |
| 12 Chlorprop-am de | 3 | 1 | | 1 | | | |
| 13 Tolbutam de | 3 | 1 | | | | 1 | |
| 14 Insul n | 1 | 1 | 1 | | | | |
| *Anti Tuberculosis* | | | | | | | |
| 15 I N H | 9 | 2 | | 1 | | | 1 |
| 16 P A S | 4 | 2 | | 1 | 1 | | |
| *Anti Toxi i Sera* | | | | | | | |
| 17 Tetanus | | | | | | | |
| Anti toxin | 5 | | | | | | |
| *Others* | | | | | | | |
| 18 Prednisolone | 3 | 2 | 1 | 1 | | | |

23 2 2 It may be noted that all the specified drugs excepting three, namely Pencillin, Chloroquin, and Tetanus Anti toxin, are subject to co laboration As regards the extent of collaboration available to each specified drug, in the case of seven specified drugs, namely, Vitamin A, Vitamin B12 and B12(b) Vitamin C, Sulphadiazine, Streptomycin, Chloramphenicol and Insulin, all the producing units have foreign collaboration or financial participation For the remaining eight specified drugs, some of their producers only have foreign collaboration or financial partic pation The country with which the manufacturers of specified drugs collaborate most frequently is the U S A, and next come U K, Switzerland, West Germany and Italy

23.2.3. Out of the 62 units in the large scale sector which are engaged in the manufacture and/or formulation of the specified drugs, only 28 units have foreign collaboration or participation the particulars of which are given in Table 23.4 :

TABLE 23.4

*Classification of units with foreign collaboration and capital participation*

| | No. of units with foreign equity participation. | No. of units with collaboration without participation |
|---|---|---|
| Manufacturers . . . . . | 2 | 1 |
| Formulators . . . . . . | 8 | 2 |
| Manufacturers-*cum*-formulators . . . | 14 | 1 |
| TOTAL . | 24 | 4 |

Foreign collaboration without participation in the equity capital is in the case of Sarabhai Chemicals, Hindusthan Antibiotics and Fairdeal Corporation. In some cases (*e.g.* Mac Labs.) there is a collaboration for the specified drugs and also its formulations..

**23.2.4. Subsidiaries of foreign manufacturing organisations**

23.2.4.1. The wholly foreign owned units engaged in the manufacture and/or formulation of the specified drugs are only four of which three are engaged in the manufacture as well as formulation of the specified drugs. They are Glaxo Labs. which is licensed to produce three of the specified drugs ; May & Baker, a foreign branch licensed to produce three of the specified basic drugs; and Boots, licensed for one specified drug. The fourth unit is Burroughs Wellcome which is engaged only in the formulations of the specified drugs. All the four units are British owned.

23 2 4 2 The total employed and paid up capital of these four wholly foreign owned concerns are as follows

TABLE 23 5

*Employed and paid up capital of foreign owned units*

(Rs in Lakhs)

| | Employed capital | Paid up capital |
|---|---|---|
| Glaxo Labs | 1,066 | 300 |
| May & Baker | 322 | 253 |
| Boots | 130 | 42 |
| Burroughs Wellcome | 89 | 50 |
| TOTAL | 1,607 | 645 |

Glaxo Labs has foreign collaboration agreements for the manufacture of two specified drugs namely Vitamin A and Prednisolone For Vitamin A, it has entered into an agreement with Eastman Kodak in 1958 which will lapse in 1973 The rate of royalty to be paid by Glaxo Laboratories is 7½ per cent on the fair market value Except to U S A and Canada, it can export to any other country Further for Prednisolone, Glaxo has a ten year collaboration agreement with Schering Ltd (U S A) which lapses in 1968 The Royalty rate is 6 per cent on sales, and it can export Prednisolone to any country excepting U S A Boots has informed us that it collaborates with its parent company in U K for the manufacture of Insulin and its formulations Burrough Wellcome, which is engaged in only formulations of the specified drugs, has entered into a collaboration agreement with Wellcome Foundation (U K) in 1951 which renewable from time to time The rate of royalty is 5 per cent nett on sales, and 5 per cent nett for technical know how Except for Glaxo Labs the other wholly foreign owned concerns do not have limiting conditions on the export of their products

### 23 2 5 Collaboration with equity participation in capital

Foreign participation in the enquity capital of units engaged in the manufacture and/or formulation of the specified drugs is either with a majority interest (51 to 99%) or with a minority

interest (3 to 49%) or with an equal interest on 50-50 basis. The total number of units which have a foreign majority share-holding is 12—five formulators and seven manufacturers-*cum*-formulators of the specified drugs. Their particulars are given in Table 23.6 :

TABLE 23.6

*Particulars of units with majority foreign capital participation*

| Sl. No. | Name of company | Employed (Rs. in lakhs) | Paid up capital (Rs. in lakhs) | Foreign share-holdings (Rs. in lakhs) | Foreign share-holdings As % of 4 | Participating country |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Ciba . . . | 779 | 325 | 211 | 65 | Switzerland |
| 2 | Bayer . . . | 240 | 265 | 141 | 54 | W. Germany |
| 3 | Pfizer . . . | 537 | 248 | 200 | 81 | U.S.A. |
| 4 | Merck Sharp . . | 245 | 180 | 108 | 60 | U.S.A. |
| 5 | Parke-Davis . . | 249 | 105 | 88 | 83 | U.S.A. |
| 6 | Roche Products . | 258 | 100 | 89 | 89 | Switzerland |
| 7 | Wyeth Labs . . | 152 | 75 | 56 | 74 | U.S.A. |
| 8 | Cyanamid . . | 192 | 70 | 46 | 65 | U.S.A. |
| 9 | Geoffrey Manners . | 72 | 32 | 25 | 78 | U.S.A. |
| 10 | Franco-Indian . . | 14 | 2 | 1·2 | 60 | France |
| 11 | Wander Pharmed . | 26 | 10 | 5·5 | 55 | Switzerland |
| 12 | Cilag-Hind . . | 8 | 5 | 3 | 60 | Switzerland |
| | TOTAL . | 2,772 | 1,417 | 973·7 | .. | .. |

23.2.6. Particulars regarding foreign collaboration in the manufacture of the specified basic drugs and formulations are as follows :

TABLE 23 7

*Particulars regarding foreign collaboration of the units manufacturing specified basic drugs and formulations*

| Sl No | Name of the Company | Name of the specified basic drug or formulation for which agreement was entered into | Collaborator's name and country | Period of agreement | | Rate of Royalty | Basis of royalty | Conditions, if any, limiting exports by Indian firm |
|---|---|---|---|---|---|---|---|---|
| | | | | from | to | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | Atul Products | Iodo chlor hydroxy quinoline | CIBA (Switzer land) | | | | | |
| 2 | Bayer | Formulations | BAYER (West Germany) | 1964 | 1983 | | | Export permitted only to the agents or distributors of BAYER |
| 3 | Biological Evans | I N H and formulations | Bracco Industrial Chemical (Italy) | 1961 | 1971 | 3 3% | On sales value | Export prices to be approved by collaborator |
| 4 | Boehringer Knoll | Chloramphenicol | CF Boehringer & Soehn (W Germany) | 1959 | | | • | • |
| 5 | Boots | Insulin and its formulations | Boots Pure Drug Co (U K ) (Parent Co ) | | | | | |

TABLE 23.7—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| 6 | Burroughs Well-come. | Formulations | Wellcome Foundation (U.K.) | 1951 | Renewable from time to time | 5% | Nett on sales Nett for technical know-how. | .. |
| 7 | Ciba . . | Formulations | CIBA Ltd., Switzerland. | 1956 | 1966 | .. | .. | .. |
| 8 | Cilag-Hind . | Formulations | Cilag Chemical Ltd., Switzerland. | 1957 | 1967 | 5% | Nett proceeds of the sale | .. |
| 9 | Cynamid . . | Tetracyclines | American Cyanamid (U.S.A.) | 1962 | 1972/77 | 5% | .. | On the value calculated on the basis of world market. |
| 10 | Fairdeal Corporation. | Formulations | Hamol Ltd. (Switzerland). | 1963 | 1968 | .. | .. | No export permitted. |
| 11 | Franco-Indian . | Formulations . | Roussel - Uclaf (France). | (Indefinite) | | .. | .. | Export permitted to such places where the collaborators are not operating already. In a country where the Indian firm exports |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | other agencies of Roussel Uclaf will not be permitted to export |
| 12 | Geoffrey Manners | Formulations | American Home Products Corpn (U S A) | .. | 1975 | . | .. | . |
| 13 | Glaxo Labs. . | 1 Vitamin A | Eastman Kodak Inc (U S A) | 1958 | 1973 | 7½% | Fair market value | Throughout the world except U S A & Canada |
| | | 2 Prednisolone | Schenco Ltd (U S A) | 1959 | 1968 | 6% | Sales | Except U S A |
| 14 | Hindustan Antibiotics | Streptomycin | Merck & Co (U S A) | 1961 | 1971 | 1½% to 2½% | Net sales in India | At higher royalty rate |
| 15 | Hoecnst | Tolbutamide | Farbwerke Hoechst A G (W Germany) | 1956/59 | 1976 | | | |
| 16 | Mac Labs. . | Chloramphenicol and formulations | Carlo Erba S P A (Italy) | 1954 | | 5%<br>5% | Cost price<br>Cost price of specialities manufactured and sold | |
| 17 | May & Baker . | 1 Sulphadiazine | May & Baker (U K) | | | | | |
| | | 2 D-iodo-hydroxyquinoline | Do | | | | | |

TABLE 23.7—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| 18 | Merck Sharp | Vitamin B12 | Merck & Co. (U.S.A.). | 1959 | 1969 | .. | .. | .. |
| 19 | Neo-Pharma | Formulations | Archifar, S.R.Ls. Milan (Italy). | Valid upto June 1968. Automatic renewal for further period of 3 years. | | .. | .. | .. |
| 20 | Parke-Davis | 1. Chloramphenicol | Parke-Davis (U.S.A.). | 1958 | Terminable on six months' notice | .. | .. | .. |
| | | 2. Amodiaquin | Do. | 1958 | Do. | .. | .. | .. |
| 21 | Pfizer | 1. Tetracyclines | Pfizer Corpn. (Panama). | 1960 | 1970 | .. | .. | .. |
| | | 2. Chlorpropamide | .. | 1965 | 1975 | .. | .. | .. |
| 22 | Roche Products | Vitamin A | F. Hoffman La Roche. (Switzerland). | 1958 | 1968 | .. | .. | .. |
| 23 | Sarabhai Chemicals | Formulations | E.R. Squibb and sons (U.S.A.) | Indefinite | — | Percentage of royalty varies from product to product. During 1965-66 it worked out to 2·9% after taxes | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 24 | Sarabhai Merck | Vitamin C | E Merck AG (W Germany) | 1958 | 1968 | — | | Prior sanction of collaborator is required. |
| 25 | Synbiotics | 1 Streptomycin | Olin Mathieson Chemical Corpn (U S A ) | 1961 | Indefinite | — | | Tetracycline cannot be exported |
| | | 2 Tetracyclines | ,, | | | | .. | .. |
| | | 3 Di iodohydroxy quinoline | ,, | 1961<br>1961 | ,,<br>,, | —<br>.. | .. | .. |
| | | 4 I N H | ,, | 1961 | ,, | — | — | .. |
| 26 | U S Vitamins . | Formulations | U S Vitamin & Pharmaceutical Corpn (U S A ) | 1961 | 1971 | — | . | They have been given franchise for export to Pakistan, Ceylon & Singapore |
| 27 | Wander Pharmed | PAS & its Salts | Dr A Wander S A (Switzerland) | 1963 | 1973 | 5% | Of the amount of invoice based on ex factory prices | |
| 28 | Wyeth Labs | Prednisolone | American Home Products Corpn (New York) (USA) | .. | Indefinite | | | |

23.2.7. There are only two units with foreign equity capital at par with indigenous capital namely, (1) Hoechst which is a manufacturer-*cum*-formulator, and (2) U.S. Vitamin which is only a formulator of the specified drugs. Their paid-up capital in 1966-67, foreign share holdings and the names of participating countries are as follows :

| | Employed capital (Rs. in lakhs) | Paid-up capital (Rs. in lakhs) | Foreign share holdings | | Participating Country |
|---|---|---|---|---|---|
| | | | (Rs. in lakhs) | Percentage | |
| Hoechst . . . | 355 | 63 | 31·5 | 50 | W. Germany |
| U.S. Vitamin and Pharmaceutical Corpn. . | 7·9 | 2·5 | 1·25 | 50 | U.S.A. |
| | 362·9 | 65·5 | 32·75 | 50 | |

23.2.8. Hoechst has a collaboration agreement for the manufacture of Tolbutamide with Forbwerke Hoechst (W. Germany) for the period 1956/69 to 1976. U. S. Vitamin, which is only a formulator of the specified drug, has a ten year collaboration agreement with U. S. Vitamin and Pharmaceutical Corpn. (U.S.A.) for the period 1961 to 1971, and it is given "franchise for export to Pakistan, Ceylon and Singapore."

23.2.9. As regards foreign equity capital participation with a minority interest ranging (from 3 to 49 per cent), there are seven units in which such participation has taken place. Of these seven units two are manufacturer , one formulator and four manufacturer-*cum*-formulators of the specified drugs. Their names and paid-up capital and foreign equity capital participation, and the names of the participating countries are given in Table 23.8.

TABLE 23.8

*Particulars of units with minority foreign capital participation*

| Name of units | Employed capital (Rs in lakhs) | Paid-up capital (Rs. in lakhs) | Foreign share holdings (Rs in lakhs) | As percentage of paid up capital | Participating Country |
|---|---|---|---|---|---|
| A. *Manufacturers of basic drugs* | | | | | |
| Synbiotics . . | 271 | 75·0 | 36·0 | 48 | U.S.A. |
| Sarabhai Merck . | 178 | 16·5 | 6·0 | 35 | West Germany |
| B *Formulators* | | | | | |
| Neo Pharma . . | 50 | 12 0 | 0·8 | 1 | Italy |
| C *Manufacturers-cum-formulators of basic drugs* | | | | | |
| Biological Evans . | 73 | 28 4 | 5·4 | 18 | U K. |
| Boehringer-Knoll . | 114 | 35 0 | 17 0 | 48 | W. Germany |
| East India Pharmaceutical . . | 49 | 24 0 | 6 0 | 25 | N A |
| Mac Labs | 32 | 5 0 | 0 2 | 3 | Italy |
| | 767 | 195 9 | 71 4 | 36 | |

23 2.10. Of the two manufacturers, Synbiotics has a collaboration agreement with Olin Mathieson Corporation (U S A) for the manufacture of Streptomycin, Tetracyclines, I N H. and Di-iodo-hydroxy-quinoline The agreement was entered in 1961 for an indefinite period. The terms of agreement do not permit Synbiotics to export its manufactures of these four specified drugs. On the other hand, Sarabhai Merck has a ten year collaboration agreement with E Merck AG (W. Germany) for the manufacture of Vitamin-C, which it had entered into in the year 1958 and which will lapse this year. In regard to exports of Vitamin-C manufactured by Sarabhai Merck, the agreement requires it to secure prior sanction of its collaborator.

Neo-Pharma has a collaboration agreement with Archifar, S. R. L. Milan, (Italy), which is valid upto June, 1968, and which can be automatically renewed for further periods of three years.

23.2.11. Out of the four manufacturers-*cum*-formulators who have foreign mainority enquity capital participation, only three have collaboration agreements. Biological Evans has a ten-year collaboration agreement with Bracco Industrial Chemical (Italy), commencing from 1961 for the manufacture of I.N.H. This agreement stipulates royalty at 3.3 per cent to be paid on sales value. Boehringer-Knoll has an agreement with CF Boehringer & Soehn (W. Germany) for the manufacture of Chloramphenicol, which it entered into in 1959 for an indefinite period. Mac Labs. has a collaboration agreement with Carlo Erba (Italy) for the manufacture of Chloramphenicol and its formulations which it entered into in 1954 and is renewable, and the rate of royalty to be paid is 5 per cent on the cost price.

23.2.12. We have come across a foreign collaboration agreement which stipulates that benefit by alternative method of manufacture or processing of any new formula suggested or discovered by the Indian company in connection with the products covered by the agreement and the benefit of any improvements in methods which may be discovered by the Indian company will belong exclusively to the foreign company abroad.

Another agreement stipulates that all Patents obtained by the Indian company in connection with the manufacture and use of all the listed products in the agreement shall promptly be assigned by Indian company to the foreign company abroad. Really speaking the foreign company should get licence from the Indian company to make use of such improvements.

23.2.13. Synbiotics has been formed in financial collaboration between Sarabhai Chemicals and Olin Mathieson Chemical Corporation of U.S.A. Sarabhai Chemicals has an agreement with Squibbs which is now owned by Olin Mathieson. The licence obtained by Sarabai Chemicals to manufacture the listed products is sub-licensed in the case of a few items to Synbiotics which is to pay an agreed subsidy to Sarabhai Chemicals. In the case of Streptomycin thus sub-licensed, Synbiotics has to pay 10 per cent royalty to Sarabhai Chemicals which has to pay to Suibbs in New York an amount equal to 12 per cent of Sarabhai

Chemicals' net sales of listed products manufactured, sub divided or packaged by Sarabhai Chemicals under this agreement

23 2 14 **Purely indigenous units**

Out of 62 units in the large scale sector engaged in the manufacture and/or formulation of the specified drugs, 37 units are wholly Indian owned, though some of them have a small percentage (not exceeding 3 per cent) of share capital held by non-Indian nationals Out of 37 Indian owned units, 2 are manufacturers, 23 formulators and 12 manufacturers *cum* formulators of the specified drugs

23 2 15 The paid up capital of the two wholly Indian manufacturers of the specified drugs is given below

Rs in lakhs

| | Employed Capital | Paid up capital |
|---|---|---|
| Atual Products | 1 370 | 200 |
| Biochemical & Synthetic | 19 | 8 |
| | 1,389 | 208 |

Of these, Atul Products only has foreign collaboration, that is, with CIBA (Switzerland) with sales arrangement under which all its production of Sulphadiazine is sold to CIBA (India)

23 2 16 Of the 23 above wholly Indian formulators of the specified drugs, only two have foreign collaboration Sarabhai Chemicals has stated that it has an agreement for an indefinite period with E R Squibb & Sons (U S A) in regard to formulation and its rate of royalty is 12½ per cent of Sarabhai Chemicals' *net sales of products manufactured, sub divided or packaged by the unit* Fairdeal Corporation has entered *into* an agreement with Hamol Ltd (Switzerland) for the period 1963 1968 under which it is not allowed to export its preparation The paid up capital of Sarabhai Chemicals is Rs 178 lakhs, and of Fairdeal Corporation is Rs 7 lakhs

23.2.17. The 12 wholly Indian manufacturers-*cum*-formulatois of the specified drugs have their paid-up capital (1966-67) and non-Indian share holdings as follows :

TABLE 23.9

*Particulars regarding wholly Indian Units*

| Sl. No. | Name of the units | Employed capital | Paid -up capital | Non-Indian Share holding (in Rs. lakhs) |
|---|---|---|---|---|
| 1 | Hindustan Antibiotics . . . | 730 | 247 | — |
| 2 | Alembic Chemical . . . . . | 440 | 208 | 0·05 |
| 3 | Haffkine Inst. . . . . . | 155 | 162 | — |
| 4 | Bengal Chemical . . . . . | 195 | 80 | 0·64 |
| 5 | Unichem Labs . . . . . | 98 | 45 | .. |
| 6 | Standard Pharmaceuticals . . | 143 | 43 | 0·48 |
| 7 | Bengal Immunity . . . . . | 75 | 26 | 0·26 |
| 8 | Chemo-Pharma . . . . . | 50 | 20 | .. |
| 9 | Calcutta Chemical . . . . . | 80 | 20 | .. |
| 10 | Albert David . . . . . . | 15 | 15 | .. |
| 11 | Dey's Medical . . . . . | 119 | 15 | .. |
| 12 | Brahmachari Research Institute . . | 10 | 3 | .. |
| | | 2,110 | 884 | 1·43 |

Out of the the above 12 units, only Hindustan Antibiotics a public sector concern has collaboration agreement which it has entered into with Merck & Co. (U.S.A.) for a period of 10 years commencing from 1961 for the manufacture of Streptomycin. The rate of royalty to be paid by Hindustan Antibiotics is 1½ to 2½ per cent on the net sales in India, which will increase in the case of exports to foreign countries.

## 23.3. Certain problems and issues raised and suggestions made by the medium and small scale units:

23.3.1. Broadly speaking the industry has a substantial investment of foreign capital resulting in foreign control of the the subsidiaries or units which have a majority participation in the share capital. Next come units which collaborate on terms of equity participation and with indigenous control ; in the third

category are wholly Indian-owned units There is yet a fourth category comprising of small scale units whose number is almost 19 times that of large scale units but whose contribution to the entire industry is only about one fifth These units together with some of the Indian-owned units in the organised sector which are lower down the rung, appear to have numerous grievances against the rest of the organised sector and also certain problems in so far as their position in the industry is concerned It also appears that on occasions the organised sector is identified with foreign owned industry in India Even the associations of drug manufacturers reflect this opposition of interest and approach The OPPI represents as it were the affluent and the large units encompassing all foreign-owned and majority foreign investment units in India On the other hand, the Indian Drug Manufacturers' Association represents mostly the small scale units and those Indian-owned units registered with the D G T D which are called medium scale units The Federation of the Associations of Small Scale Industries of India (F A S I I) has also represented to us certain problems faced by the small scale units The latters organization has stated that (a) the small scale units in the drugs and pharmaceutical industry have been facing uncertain future due to a lack of proper and equitable policy as regards industrial licensing, import licensing and allocation of imported and indigenous raw materials , (b) the bulk of imported and indigenous raw materials goes to the "scheduled sector, (c) the large scale units being the producers of most of the raw materials and intermediates are in a position to dictate their price and terms to the small scale units , and (d) most of the producers of intermediates also produce the end-products, and this enables them to drive out the small scale units from the market The Indian Drug Manufacturers' Association (I D M A) has also complained that the large scale units manufacturing the basic drugs reserve their output to themselves and deny supplies to the small scale formulators

23 2 2 In this regard it has been suggested by F A S I I (a) that the units manufacturing intermediates or raw materials should not be permitted to manufacture products in dosage forms, (b) that small scale units should be supplied with adequate quantities of raw materials at reasonable prices, and organisation

by reserving a certain percentage of the quota of their output for distributing among small scale industrial units

23.3.3. The I.D.M.A. has also suggested that (a) for manufacture of basic drugs licences be issued to more than one party for the same basic drug ; (b) while issuing licences, first the market prices of the basic drugs be determined, and then the manufacturing licences be issued for only such items which can be sold by the indigenous manufacturer at or near international price or within the fixed prices ; (c) basic drug manufacturing and formulation activity be treated completely separately and that no licence be issued for the formulation activity merely because the party offers to manufacture basic drugs ; otherwise, there must be a definite ratio, *e.g.*, say 1:1 between his production of basic drug and his production of formulations made out of that basic drug particularly in the case of foreign manufacturing units ; (d) in future no foreign unit be allowed to do formulations; (e) arrangement should be made for import of know-how by a Government agency and to sell it to Indian concerns for a few basic items; (f) import licences for the intermediates and other required raw materials, etc. be given on the basis of production of particular basic items and not for items of formulations; (g) import licences for formulation industry be separately set out, and the Indian concerns should first get whatever they need, the existing foreign controlled ones the balance only, while the new foreign units be totally denied; and (h) all import duties, etc. on intermediate be removed so as to see that the basic items are sold at or near c.i.f. international prices.

23.3.4. It is stated by the I.D.M.A. that the existing governmental control on prices it actually not price control but a price freeze of the individual manufacturer's price list as prevailing in November, 1963. Both the I.D.M.A. and the F.A.S.I. I. have complained that the Indian manufactures who fixed lower and reasonable prices for their products before the Price Control Order have been obliged to maintain those prices under the Price Control Order, and they have been finding it difficult to do so with increasing prices of raw materials, packing etc., whereas the foreign concern whose original list prices were already high could absorb the increases in the prices of chemicals, packing materials, etc. that took place subsequent to the Price Control Order.

23.3.5. The F.A.S.I.I. has stated further that although there is a provision for increase in prices under the Price Control Order, the procedure stipulated is very cumbersome involving long delays ; and that by the time sanction is obtained for revision of prices, a further revision becomes necessary on account of the steadily rising prices of raw materials etc. It has, there fore,

urged that this procedure should be simplified and that applications for upward revision of prices should be dealt with and disposed of as early as possible by the State Drugs Controllers It has also suggested that for the drugs considered essential, Government might fix the maximum selling prices for single drug formulations, and review them every quarter of half year according to the cost of the indigenous and packing material available

23 3 6 The F A S I I has complained that the prices charged by the indigenous manufacturers of basic drugs are very high compared to the prices of similar imported drugs, and that the increases in their raw material prices like those of sugar, bottles and packing materials are also creating havoc for the small scale sector particularly in view of their existing low level of prices The F A S I I has urged that Government must ensure that raw materials like sugar etc be made available to the small units in [illegible]

get eliminated if there is only a price freeze for drugs It has also complained that the prices charged by differrent indigenous manufacturers for the same product and of the same strength vary and that the prices charged by foreign companies in India are higher than those charged in other countries by their parent or associated companies

23 3 7 The existence of numerous small scale pharmaceutical and drugs units helps in the stabilisation of prices of drugs and medicines in the market, according to the F A C I I In fact it has been stated that the price of I N H which was as high as Rs 120 per kg in the pre devaluation days is now a days quoted at less than Rs 70 per kg because of the impact of the small units that have come into production

23 3 8 It is complained by F A S I I that large scale units are allowed foreign collaboration for such items as food colours that are manufactured in the country by certain small scale units As this results in unhealthy competition between the large scale and small scale units, it is suggested by F A S I I that foreign collaboration for simple plant products should not be encouraged

23 3 9 According to I D M A, the foreign controlled concerns in the industry command 65 to 70 per cent of the domestic pharmaceutical market and that their average profit margin on sales in 1964-65 was 7 4 per cent compared to 3 4 per cent of the Indian concerns

# CHAPTER 24

## SELLING PRICES

24.1. Amodiaquin and Chlorpropamide are not sold at all as the producers formulate and make use of the entire quantity themselves. Vitamin C is not formulated by the producer and the entire quantity is sold. As regards the rest of the drugs, the quantities produced and sold during the last three years are given in the following Table:

TABLE 24.1

*Production and sales of basic drugs*

| Name of Drug | Unit | Production | | | Sales | | | Sales as % of production | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1965 | 1966 | 1967 | 1965 | 1966 | 1967 | 1965 | 1966 | 1967 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Vitamin A . . . | MMU | 24·5 | 21·4 | 23·8 | 6·3 | 8·2 | 8·4 | 26 | 37 | 35 |
| 2. Vitamin B 12 . . . | Kgs. | 27·2 | 41·8 | 53·7 | 22 | 28 | 33 | 81 | 68 | 61 |
| 3. Vitamin C . . . | Tonnes | 90 | 131 | 77 | 102 | 112 | 38 | 113 | 85 | 49 |
| 4. Sulphadiazine . . | Tonnes | 108 | 77 | 44 | 62 | 14 | 5 | 57 | 18 | 11 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5 Penicillin | MMU | 103 | 147 | 119 | 84 | 92 | 53 | 81 | 63 | 45 |
| 6 Streptomycin | Tonnes | 92 | 104 | 125 | 80 | 84 | 90 | 87 | 81 | 72 |
| 7 Chloramphenicol | Tonnes | 25 6 | 24 3 | 21 6 | 7 7 | 4 5 | 0 8 | 30 | 19 | . 4 |
| 8 Tetracyclines | Tonnes | 20 6 | 19 7 | 15 7 | 6 6 | 4 7 | 3 5 | 32 | 24 | 22 |
| 9 Chloroqu n | Tonnes | 2 4 | 2 8 | 3 4 | 0 5 | 0 9 | 0 1 | 21 | 32 | 3 |
| 10 Iodochlorhydroxy quinoline | Tonnes | 68 6 | 87 0 | 71 5 | 45 6 | 53 7 | 39 1 | 66 | 62 | 55 |
| 11 Tolbutamide | Tonnes | 16 5 | 24 9 | 12 0 | 0 1 | 2 1 | 0 4 | 1 | 8 | 3 |
| 12 Insulin | M U | 439 | 458 | 410 | 88 | 199 | 165 | 20 | 43 | 40 |
| 13 I N H | Tonnes | 63 | 63 | 53 | 49 | 22 | 19 | 78 | 35 | 36 |
| 14 P A S | Tonnes | 333 | 320 | 256 | 218 | 172 | 178 | 65 | 54 | 70 |
| 15 Tetanus Antitoxin | Thousand M U | 4 9 | 5 1 | 6 9 | Nil | Nil | Nil | -- | | |
| 16 *Prednisolone* | Kgs | 360 | 588 | 484 | 257 | 412 | 348 | 71 | 70 | 72 |

24 2 In the case of six drugs, namely, Vitamin B12, Streptomycin, Tetracyclines, Iodochlor hydroxy quinoline P A S and Prednisolone, the sales contributed the bulk of the production (more than 50%) while in the case of the remaining the sales were of a quantity lower than that used by the basic manufacturers of the drugs put together in each case

Producers' bulk prices for the specified basic drugs in 1966-67 are given in Table 24.2 :

TABLE 24.2

*Producers' bulk prices for the specified basic drugs in India*

| Sl. No. | Basic Drug/Selling Manufacturer | Description of the drug/bulk packing | Strength, if any, given | Unit for pricing | Prices in 1966-67 Rs. | Price revision, if any, during 1967-68 |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | VITAMIN-A | | | | | |
| | (1) Roche Products | Pharmaceutical Grade Synthetic Vitamin—A. | | | | |
| | | (1) Acetate | 1·0 MU per gm | BU | 594 | -- |
| | | (2) Palmitate | 1·0 MU per gm | BU | 594 | -- |
| | | (3) Palmitate | 1·7 MU per gm. | BU | 594 | -- |
| | | (4) Watermiscible | 0·1 MU per ml. | BU | 874 | -- |
| | | (5) Watermiscible plus Vit.D2 (10:1) | .. | BU | 885 | -- |
| | | (6) Dry Vit. A Acetate Type 325 | Type 325 | Kg. | 275 | -- |

| | | | | | |
|---|---|---|---|---|---|
| | (7) Dry Vit A | 500 | Kg | 421 | .. |
| | (8) Dry Vit A Palmitate type 500 | Type 500 | Kg | 421 | .. |
| (2) Glaxo Labs | (1) Vitamin A Palmitate/Acetate | 1 0 MU per gm .. | BU | 594 | |
| 2 VITAMIN B12 | | | | | |
| (1) Merck Sharp | (1) Cryst Vit B 12 | .. | gm | 175 | 160 |
| | (2) Trit of Vit B12 with calcium phosphate Diabasic 0 5% 0 1% | | gm | 221 | |
| | (3) Trituration of Vit B12 0 1% in Gelatin | | gm | 261 | |
| (2) Themis Pharmaceuticals | Vitamin B12 | | gm | 135 | |
| (3) Glaxo Labs | (1) Vitamin B12(b) | .. | gm | 330 | 275 |
| 3 VITAMIN C | | | | | |
| (1) Sarabhai Merck | Vitamin C | | Kg | 74 | |
| 4 SULPHADIAZINE | | | | | |
| (1) Atul products | (1) Sulphadiazine | | kg | 64 | |
| (2) May & Baker | (only 0 2% of sulphadiazine produced in 1966 sold to other pharmaceutical firms | | | | 65—72 (depending upon size of order) |

TABLE 24.2—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 5 PENICILLIN | | | | | | |
| | (1) Hindustan Antibiotics | (1) Crystaline Pen. G. Potassium First Crystals non-soluble salts. | .. | BU | 400 | .. |
| | | (2) Procain Benzyl Pen. I.P. plain powder. | — | BU | 500 | .. |
| | | (3) Procain Benzyl Pen. I.P. Tweencoated powder. | — | BU | 500 | .. |
| | | (4) Penicillin V Potassium I.P. (for tablets). | .. | BU | 800 | .. |
| | | *Soluble Salts* | | | | |
| | | (5) Benzyl Pen. (Pot. Salt) I.P. suitable for parenteral use | .. | BU | 500 | .. |
| | | (6) Benzyl Pen. (Pot. Salt) I.P. (Tablet Grade). | .. | BU | 500 | .. |
| | (2) Alembic Chemical | Penicillin (Proposed to take over the distribution work by the company from 1-1-1967). | — | BU | 500 | .. |
| | (3) Standard Pharmaceuticals | (1) Penicillin Sterile | — | BU | 500 | .. |
| | | (2) Penicillin Non-sterile. | — | BU | 400 | .. |

| | | | | | |
|---|---|---|---|---|---|
| 6 STREPTOMYCIN | | — | Kg. | 295 | .. |
| (1) Hindustan Antibiotics | Streptomycin Sulphate | — | Kg. | 295 | .. |
| (2) Synbiotics | Streptomycin Sulphate | | | | |
| 7 CHLORAMPHENICOL | | .. | | | |
| (1) Parke Davis | No bulk sales | — | Kg. | 410 | .. |
| (2) Boehringer-Knoll | Chloramphenicol | | | | |
| (3) Mac Labs | No bulk sales; production for self consumption | | | | |
| 8 TETRACYCLIN | | — | Kg. | 1147 | .. |
| (1) Pfizer | Tetracycline Hydrochloride | .. | Kg | 1147 | .. |
| (2) Cyanamid India | Tetracycline Powder | .. | Kg | 1150 | .. |
| (3) Hindustan antibiotics | Chlortetracycline | .. | Kg. | 1147 | .. |
| (4) Synbiotics | Tetracycline Hydrochloride | | | | |
| 9 CHLOROQUIN | | | Kg | 275 | |
| Bengal Immunity | Chloroquine Phosphate USP | | | | |
| 10 IODOCHLORHYDROXY QUINOLINE. | | | Kg | 80 | . |
| A Large Scale Units Atul Products | | | | | |

TABLE 24.2—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| | B. Small Scale units | | | | | |
| | (1) Neogy Labs | .. | .. | Kg. | 38 to 42 | 48 |
| | (2) Syno Chem | .. | .. | Kg. | 45 | .. |
| | (3) Sunny Industries | .. | .. | Kg. | 50 | 51·50 |
| 11 | TOLBUTAMIDE | | .. | | | |
| | (1) Unichem Labs | .. | .. | Kg. | 80 (Ex-factory only) | .. |
| | (2) Hoechst Pharmaceutical | .. | .. | Kg. | 70 | 121 |
| 12 | INSULIN | | | | | |
| | Boots | (1) Crystals from plain Insulin solution. | .. | MU | 4200 | 5000 |
| | | (2) Enzyme tested from P.Z. Insulin solution. | .. | MU | 4500 | 5300 |
| | | (3) Nova Crystals from Lente Insulin solution. | .. | MU | 5300 | 6100 |
| | | (4) Hegedown Crystals from N.P.H. Insulin solution. | .. | MU | 5300 | 6100 |
| 13 | I.N.H. | | .. | | | .. |
| | A. Large Scale units | | | | | |
| | (1) Bengal Immunity | .. | .. | Kg. | 100 | .. |

| | | | | |
|---|---|---|---|---|
| (2) Bengal Chemical | | Kg | 120 (for Calcutta) | |
| (3) Pfizer | Bulk prices not yet fixed | | | |
| (4) Synbiotics | | Kg | 85 | |
| (5) Biological Evans | | Kg | 80 (for Hyderabad) | 65 |
| (6) Chemo-Pharma | | Kg | 95 | 66 25 |
| 5 Small Scale Units | | | | |
| (1) Dr Karanth's Pharma | | Kg. | 70—75 | |
| (2) Suneeta Labs | | Kg | 80 plus tax | |
| 14 P A S | | | | |
| (1) Bio-Chemical & Synthetic | Entire product is taken over by its collaborators, Cilag Hind | | | |
| (2) Pfizer | Not selling in bulk | | | |
| (3) Biological Evans | | Kg | 32 | 33 60 |
| (4) Wander Pharmed | | Kg | 36 | |
| 15 TETANUS ANTI-TOXIN | (Not sold in bulk) | | | |
| 16 PREDNISOLONE | | | | |
| (1) Glaxo Labs | | gm | 25 | |
| (2) Merck-Sharp | | gm | 16 | |
| (3) Wgeth Labs | | gm | 17 | |

24.4. Foreign domestic prices for some of the drugs were as follows :

TABLE 24.3

*Foreign domestic prices of basic drugs in* 1967 (for some important countries)

| Basic Drug/Country | Description of Drug/ bulk packing | Strength if any given | Unit for pricing | Price in foreign country & particulars of price | Price in Indian Currency (Rs.) |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| | *(1 Million international units of A=1 Kg. of A)* | | | | |
| 1. VITAMIN-A | | | | | |
| (1) U.S.A. . . . . | (1) Synthetic, dry (50 kg. lots) | 0·5 M.U. per gm. | per kg. | $ 22 (delivered price) | 167 |
| | (2) Liquid in oil (50 B.U. lots) | 1.0 M.U. per gm. | per BU | $ 40 (f.o.b. New York) | 304 |
| (2) Denmark. . . . | Acetate; mineral stable dry powder (feed grade) | 0·325 M.U. per gm. | per kg. | $ 6·15 (U.S.) (also its world market price) | 47 |
| 2. VITAMIN-B12 | | | | | |
| (1) U.S.A. . . . . | (1) Crystaline (USP) (cyanocobalamin) (vials) (1·50 gm. lots). | .. | per gm. | $ 32 (f.o.b. New York) | 243 |

| | | | | |
|---|---|---|---|---|
| | (2) 0 1%[Cyanocobalamin in Gelatin (1 and 25 kg drums) | per gm activity | $ 42 (freight allowed) | 319 |
| (2) Denmark. . . . | Vitamin B12 (feed grade) | per gm activity | $ 4(US) (also its world market price) | 30 |
| (3) VITAMIN C | | | | |
| (1) U S A. . . . . | Ascorbic acid (U S P), (100 kilo lots) | per kg | $ 4 10 (delivered price) | 31 |
| (2) Denmark. . . . | (1) Vitamin C | per kg | $ 3 30 (U S) | 25 |
| | (2) Vitamin C coated | per kg | $ 4 10 (U S) (also its world market price) | 31 |
| 4 SULPHADIAZINE | | | | |
| (1) U S A. . . . | (1) Sulphadiazine (U S P) Powdered (500 kilos drums) | per kg | $ 12 15 | 92 |
| | (2) Sulphadiazine (U S P) micro crystals (500 kilos drums) | per kg | $ 16 15 | 100 |
| | (3) Sulphadiazine Sodium (U S P) (500 kilos drums) | per kg | $ 13 15 (Minimum prices) | 123 |
| (2) Denmark | Sulphadiazine | per kg | $ 5 75 (U S) (It is also the world market price) | 44 |

TABLE 24.3—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| (3) K. | Sulphadiazine powder form (1) 50 kg. fibre drums | .. | per kg. | Sh. 42/- (for wholesalers in U.K.). | 38 |
| | (2) 5 kg. tins | .. | per kg. | Sh. 48/5 d (for wholesalers in U.K.) | 44 |
| | (3) ½ kg. bottles | .. | per kg. | Sh. 55/9 d (for wholesalers in U.K.). | 50 |
| (4) France | 3 tonnes lots | .. | per kg. | Sh. 40/9 d | 30 |
| 5. PENICILLIN | | | | | |
| (1) U.S.A. | (1) Penicillin Potassium non-sterile crystals (bulk) | .. | per B.U. | $ 21·75 | 165 |
| | (2) Penicillin Procaine, Sterile crystals (bulk) | .. | per B.U. | $ 23·75 | 181 |
| (2) Denmark. | (1) Penicillin G Procaine Sodium or Potassium. | .. | per B.U. | $ 20·50 (U.S.) (It is also the world market price) | 156 |
| | (2) Penicillin V (Phenoxymethyl penicillin potassium) | .. | Per B.U. | $ 22·00 (U.S.) | 167 |

| | | | | |
|---|---|---|---|---|
| (3) France . . . . | (1) Penicillin G Sodium | per B U | $ 21 50 (U S ) | 163 |
| | (2) Procaine Penicillin G | per B U | $ 21 50 (U S ) | 163 |
| 6 STREPTOMYCIN | | | | |
| (1) U S A (The Oil, Paint and Drug Reporter for Sept 1967) | Streptomycin Sulphate (U S A ) (bulk) | per kg | $ 33 | 251 |
| (2) Denmark (Marsing & Co , Ltd , Dec. 1966) | Streptomycin Sulphate | per kg base | $ 27 (U S ) (It is also the world market price) | 205 |
| (3) France (M/s Rhone Poulene, Paris, which is represented in India by Voltas Ltd ) | (1) Streptomycin base represented as sulphate) | per kg | $ 30 50 (U S ) | 232 |
| | (2) Hydrostreptomycin base (represented as sulphate) | per kg | $ 30 50 (U S ) | 232 |
| 7 CHLORAMPHENICOL | | | | |
| (1) Denmark. . . . | 1 Chloramphenicol | per kg | $ 17 50 (U S ) (It is also the world market price) | 133 |
| | 2 Chloramphenicol Palmitate | per kg | $ 17 50 (It is also the world market price) | 133 |
| 8 TETRACYCLINES | | | | |
| 9 AMODIAQUIN . | | | | .. |

TABLE 24.3—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 10. CHLOROQUIN | | | | | |
| (1) Denmark. | Chloroquin Diphosphate | .. | per kg. | $ 18·25 (It is also the world market price) | 139 |
| | (2) Chloroquin (Imperial Chemical Industries Ltd.) | Pack of less than 500 kg. | per kg. | Sh. 150/- | 135 |
| | | Pack of over 500 kg. | per kg. | Sh. 145/- | 130·50 |
| (2) France | Chloroquin Diphosphate (in bulk of 500 kgs. only). | .. | per kg. | Sh. 140/ 8½d | 127 |
| 11. (a) IODO-CHLORHYDROXY-QUINOLINE | | | | | |
| (1) U.S.A. | (1) U.S.P. XVI (100 lb. drums) | .. | per lb. | $ 8·60 (Freight allowed) | 65 |
| (2) Denmark. | Iodo-chlor-hydroxyquinoline | .. | per kg. | $ 4·80 (U.S.) (also world market price) | 36 |
| (3) France | 5-chloro-7-Iodo 8-Hydroxyquinoline (1 tonne lots) | .. | per kg. | Sh. 39/3d | 35 |
| | Iodochlorohydroxyquinoline | pack of 250 kg. | per kg. | Sh. 48/od | 43·20 |

| | | | | | |
|---|---|---|---|---|---|
| 11 (b) DI-IODO HYDROXY-QUINOLINE | | | | | |
| 1 U K (May & Baker) | Powdered (1) 25 kg fibre drums | — | per kg. | Sh. 77/6d | 69 |
| | (2) 5 kg tins | — | per kg | Sh. 80/- | 72 |
| (Ware Blenkinsop & Co ) | (3) pack of 250 kg | — | per kg. | Sh 50/- | 45 |
| 12 I N H. | | | | | |
| (1) U S A | Isoniazid powder | — | per kg | $ 6 25 | 47 |
| (2) Denmark | Isonicotonic Acid Hydrazide | . | per kg | $ 3 80 (U S ) (also the world market price) | 29 |
| (Ward Blenkinsop & Co. Ltd.) | Pack of 250 kg | — | per kg | Sh 37/6 d | 33 75 |
| 13 P A S. | | | | | |
| (1) U S A | Para-Aminosalycylic Acid (U S P ) (in drums of 100 lbs or more) | . | per lb | $ 4 50 (freight adjusted) | 34 |
| (2) Denmark. | P A S Sodium | | per kg | $ 1 65 (U S ) (also the world market price) | 13 |
| (3) France | (1) Sodium P A S | .. | per kg | Sh 14/7 ½d | 13 |
| | (2) P A S Acid | | per kg | Sh 26/1 d | 24 |

245. The [illegible]
[illegible]
in India with [illegible]
It has been [illegible]
of [illegible]
[illegible], in the [illegible]
[illegible]
it is [illegible]

246. [illegible]
[illegible]
[illegible]

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 Glaxo Labs | PREPALIN | 1 lac I U/ml | 6 × 1 ml carton | each carton | 4 28 | 5 28 |
| | PREPALIN FORTE | 3 lac I U/ml | 6 × 1 ml carton | each carton | 6 42 | 7 92 |
| *Vitamin-A Tabs* | | | | | | |
| 1 Roche Products | AROVIT | 0 5 lac I U/Tab | Pack of 200 tabs | per pack | 42 70 | 52 70 |
| *Vitamin B 12 Inj* | | | | | | |
| 1 Anglo French | — | 100 mcg/ml | 10 ml vial | per vial | 1 86 | 2 25 |
| | | 50 mcg ml | 5 ml vial | per vial | 3 30 | 4 00 |
| | | 500 mcg/ml | 10 ml vial | per vial | 5 78 | 7 00 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 5 78 | 7 00 |
| 2 CIPLA | CIPLAMIN | 500 mcg/ml | 5 ml vial | per vial | 4 28 | 5 28 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 6 42 | 7 92 |
| 3 Sarabhai Chemicals | RUPRAMIN | 100 mcg/ml | 5 ml vial | per vial | 1 61 | 1 99 |
| | | 500 mcg/ml | 5 ml vial | per vial | 4 28 | 5 28 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 7 49 | 9 24 |
| 4 Bengal Immunity* | — | 100 mcg/per ml | Bottle of 10 ml | per bottle | 1 10 | 1 32 |
| | | 500 mcg/ml | Bottle of 10 ml | per bottle | 4 09 | 4 [illegible] |
| | | 1000 mcg/ml | Bottle of 5 ml | per bottle | 4 00 | 4 80 |
| 5 British Drug House | ANACOBIN | 100 mcg/ml | vial of 10 ml | per vial | 2 46 | 3 06 |
| | | 200 mcg/ml | vial of 10 ml | per vial | 4 8[illegible] | 5 97 |
| | | 500 mcg/ml | vial of 5 ml | per vial | 4 07 | 5 02 |
| | | 1000 mcg/ml | vial of 5 ml | per vial | 7 06 | 8 71 |
| 6 Bengal Chemical | — | 100 mcg/ml | Box of 6 vial | per box | 2 [illegible]5 | 3 00 |
| 7 Smith Stanstreet | COBASTAN | 5[illegible] mcg/ml | 5 ml vial | per vial | 3 60 | 4 45 |
| 8 Unichem Labs | CYANOCOBALAMIN | 100 [illegible]/m[illegible] | 10 ml v[illegible] | per [illegible] | [illegible] | 2 [illegible]0 |
| | | [illegible] | [illegible] | per vial | [illegible] | 11 [illegible] |
| | | 5[illegible] mc[illegible] ml | [illegible] | per [illegible] | [illegible] | 4 [illegible] |
| | | 1000 mcg/ml | 10 ml vial | per vial | 7 00 | 8 0[illegible] |

*Exclusive of central excise duty

TABLE 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 9 | Dey's Medical | VITADOUZE "500" | 500 mcg/ml | vial of 5 ml | per vial | 2.52 | 3.18 |
| | | VITADOUZE "1000" | 1000 mcg/ml | vial of 5 ml | per vial | 6.14 | 7.29 |
| 10 | Albert David | SIOCOBIN | 100 mcg/ml | vial of 5 ml | per vial | 1.25 | 1.50 |
| | | | 500 mcg/ml | vial of 5 ml | per vial | 2.75 | 3.[illegible] |
| | | | 1000 mcg/ml | vial of 5 ml | per vial | 3.75 | 4.2[illegible] |
| 11 | Rallis | | 100 mcg/ml | vial of 10 ml | per vial | [illegible] | 1.01 |
| | | | 500 mcg/ml | vial of 5 ml | per vial | 3.21 | 3.01 |
| | | | 1000 mcg/ml | vial of 5 ml | per vial | 7.31 | 7.6[illegible] |
| 12 | Cadila Labr. | COBALMIN-500 | 500 mcg/ml | 5 ml vial | per vial | 2.50 | 2.73 |
| 13 | OPIL | — | | | | | |
| | | CYANOCOBALMIN | 100 mcg/ml | 10 ml vial | per vial | 1.10 | 1.26 |
| | | | 500 mcg/ml | 10 ml vial | per vial | 2.25 | 3.15 |
| | | | 1000 mcg/ml | 5 ml vial | per vial | 1.75 | 2.6[illegible] |
| | | | 100 mcg/ml | 10 ml vial | per vial | 4.75 | 5.45 |
| | | | 500 mcg/ml | 20 × 10 ml vial | per vial | 25[illegible] | .. |
| | | | 1000 mcg/ml | 20 × 5 ml vial | per vial | 13[illegible] | .. |
| | | | 100 mcg/ml | 20 × 5 ml vial | per vial | 53[illegible] | .. |
| | | | 500 mcg/ml | 50 × 10 ml vial | per vial | 37[illegible] | .. |
| | | | 1000 mcg/ml | 50 × 10 ml vial | per vial | 75[illegible] | .. |
| | | | 100 mcg/ml | 50 × 5 ml vial | per vial | 115[illegible] | .. |
| 14 | Therapeutic Pharmaceuticals | CYANOMIN | | 10 ml vial | per vial | 2.[illegible] | 2.4[illegible] |
| | | | | 10 × 10 ml vial | per 10 vial | 15.15 | 19.0[illegible] |
| | | | 500 mcg/ml | 5 ml vial | per vial | 1.77 | 4.45 |
| | | | | 10 × 5 ml vial | per vial | [illegible] | 33.0[illegible] |
| | | | 1000 mcg/ml | 5 ml vial | per vial | 6.46 | 7.0[illegible] |
| | | | | 10 × 5 ml vial | per 10 vial | 31.7[illegible] | 63.23 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | Gurco Pharma | — | 100 mcg/ml | 10 ml vial | per vial | 1 00 | 1 25 |
| | | | 500 mcg/ml | 5 ml vial | per vial | 1 50 | 1 07 |
| | | | | 10 ml vial | per vial | 2 75 | 3 44 |
| | | | 1000 mcg/ml | 5 ml vial | per vial | 2 75 | 3 41 |
| | | | | 10 ml vial | per vial | 5 00 | 6 25 |
| 16 | Zandu | — | 50 mcg/ml | 5 ml vial | per vial | 0 68 | 0 80 |
| | | | | 10 ml vial | per vial | 0 85 | 1 00 |
| | | | 100 ml vial | 5 ml vial | per vial | 0 85 | 1 00 |
| | | | | 10 ml vial | per vial | 1 27 | 1 50 |
| | | | 500 mcg/ml | 5 ml vial | per vial | 1 79 | 2 10 |
| | | | | 10 ml vial | per vial | 3 15 | 3 70 |
| | | | 1000 mcg/ml | 5 ml vial | per vial | 2 97 | 3 50 |
| | | | | 10 ml vial | per vial | 5 52 | 6 50 |
| 17 | Khandelwal Labs | CYANOPLOV | 100 mcg/ml | 10 ml vial | per vial | 1 60 | 1 90 |
| | | | 300 mcg/ml | 5 ml vial | per vial | 2 50 | 2 95 |
| | | | mcg/ml | 10 ml vial | per vial | 4 25 | 5 00 |
| | | | 1000 mcg/ml | 5 ml vial | per vial | 4 25 | 5 00 |
| | | | | 10 ml vial | per vial | 8 25 | 9 75 |
| 18 | Shetty's Pharmaceutical | — | 100 mcg/ml | 10 ml vial | per vial | 1 19 | 1 40 |
| | | | 500 mcg/ml | 5 ml vial | per vial | 2 12 | 2 50 |
| | | | 1000 mcg/ml | 10 ml vial | per vial | 3 80 | 4 50 |
| | | | | 5 ml vial | per vial | 3 80 | 4 50 |
| | | | | 10 ml vial | per vial | 6 80 | 8 00 |
| 19 | Gujarat Pharmaceutical | — | 500 mcg/ml | 10 ml vial | per vial | 3 15 | 4 35 |
| 20 | Merck Sharp | REDISOL | 100 mcg/ml | 5 ml vial | per vial | 1 61 | 1 89 |
| | | | | 10 ml vial | per vial | 2 57 | 3 17 |
| | | | 500 mcg/ml | 5 ml vial | per vial | 4 28 | 5 28 |
| | | | 1000 mcg/ml | 5 ml vial | per vial | 7 49 | 9 24 |

TABLE 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 21 | Glaxo Labs. | MACRABIN | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 22 | Alembic Chemical | CYCOBAL | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 23 | Mac Labs | COBMAC | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 24 | Pfizer | DUVIT | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| | *Vitamin B12 Injection* | | | | | | |
| 1 | Anglo-French | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 2 | CIPLA | CIPLAMIN-H | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 3 | Sarabhai Chemicals | RUBRAMIN-H | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 4 | Unichem Labs. | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 5 | Therapeutic Pharmaceuticals | CYNOMIN-H | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 Gurco Pharma | .. | 500 mcg ml | 10x5 ml vial | per 10 vial | 3 73 | 4 57 |
| 7 Khandelwal Labs | .. | 500 mcg ml | 10x5 ml vial | per vial | 3 00 | 4 30 |
| | | | 10x5 ml vial | per vial | 7 00 | 8 00 |
| | | 100 mcg ml | 5x5 ml vial | per vial | 7 00 | 8 00 |
| 8 Gujarat Pharmaceuticals | COBIN H | 500 mcg/ml | 5 ml vial | per vial | 3 73 | 4 37 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 6 00 | 7 50 |
| 9 Glaxo Labs | MACRABIN H | 500 mcg/ml | 5 ml vial | per vial | 4 28 | 5 28 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 7 49 | 9 24 |
| 10 Merck Sharp | REDISOL-H | 500 mcg/ml | 5 ml vial | per vial | 4 92 | 6 07 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 3 62 | 10 63 |
| *Vitamin C Injection* | | | | | | |
| 1 Anglo-French | | 500 mg/ampoule | 25x5 ml Box | per box | 10 48 | 12.70 |
| 2 CIPLA | CETAMID | 500 mg/ml | 2 ml box of 5 amps | per box | 1 82 | 2 17 |
| | | | 2 ml box of 50 amps | per box | 10 00 | 13 10 |
| | | 100 mg/ml | Box of 5 amps | per box | 1 82 | 2 17 |
| | | | Box of 50 amps | per box | 10 70 | 13 20 |
| | | 500 mg/5 ml | 5 ml box of 10 amps | per box | 4 48 | 5 28 |
| | | | 5 ml box of 50 amps | per box | 16 06 | 19 81 |
| 3 Bengal Chemical | VITACIN | 100 mg/ml | 2 ml box of 6 | per vial | 1 46 | 1 95 |
| | | | 2 ml box of 50 | per vial | 9 71 | 12 95 |
| 4 Albert David* | | 100 mg/2 ml | Box of 6 amps | per vial | 1 85 | 2 22 |
| | | | Box of 12 amps | per vial | 3 50 | 4 20 |
| | | | Box of 25 amps | per vial | 7 10 | 8 52 |
| | | | Box of 50 amps | per vial | 13 45 | 16 14 |
| | | | Box of 100 amps | per vial | 25 00 | 30 00 |
| | | 200 mg/2 ml | Box of 50 amps | per vial | 18 00 | 21 66 |
| | | | Box of 100 amps | per vial | 35 00 | 42 00 |

TABLE 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| | | | 500 mg/2 ml | Box of 3 amps | per vial | 2.10 | 2.52 |
| | | | | Box of 6 amps | per vial | 3.85 | 4.62 |
| | | | | Box of 12 amps | per vial | 6.90 | 8.28 |
| | | | | Box of 25 amps | per vial | 12.65 | 15.18 |
| | | | | Box of 50 amps | per vial | 22.20 | 26.64 |
| | | | | Box of 100 amps | prer vial | 40.00 | 48.00 |
| 5 | OPIL | .. | 50 mg/ml | Box of 5 amps 2 ml | per box | 1.20 | 1.40 |
| | | | | Box of 100 amps 2 ml | per box | 18.00 | 20.70 |
| 6 | Zandu | .. | 100 mg×1 ml | 6 amps pack | per pack | 1.20 | 1.35 |
| | | | | 25 amps pack | per pack | 3.65 | 4.06 |
| | | | | 100 amps pack | per pack | 13.65 | 15.15 |
| | | | 500 mg×5 ml | 6 amps pack | per pack | 2.00 | 2.24 |
| | | | | 25 amps pack | per pack | 6.45 | 7.14 |
| | | | | 100 amps pack | per pack | 25.25 | 28.00 |
| 7 | Glaxo Labs. | CELIN | 100 mg | 6 amps pack | per pack | 1.87 | 2.31 |
| | | | | 25 amps pack | per pack | 6.42 | 7.92 |
| 8 | Roche Products* | REDOXON | 100 mg | 50 2 ml amps | per pack | 16.87 | 20.82 |
| | | | 500 mg | 25 5 ml amps | per pack | 15.69 | 19.36 |
| 9 | Bengal Immunity* | ASCACID | 100 mg/ml | Box of 50 amps | per box | 10.15 | 12.18 |
| | | | 500 mg/5 ml | Box of 50 amps | per box | 21.60 | 25.92 |
| | *Vitamin-C Tablets* | | | | | | |
| 1 | Anglo-French | .. | 100 mg | Bottle of 1000 tabs. | per bottle | 13.20 | 16.00 |
| | | | 0.5 G | Bottle of 500 tabs. | per bottle | 29.04 | 35.20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | CIPLA | CETAMID | 100 mg | 25's tabs pack | per pack | 1 07 | 1 52 |
| | | | | 100's tabs pack | per pack | 2 67 | 3 27 |
| | | | | 500 s tabs pack | per pack | 11 77 | 14 52 |
| | | | | 1000 s tabs pack | per pack | 20 34 | 25 09 |
| 3 | Sarabhai Chem cals | ASCORBICIN | 250 mg | 20 s Bottle | per bottle | 1 34 | 1 65 |
| | | | | 100 s Bottle | per bottle | 5 55 | 6 60 |
| 4 | Bengal Immunity | ASCACID | 50 mg | Bottle of 50 tabs | per bottle | 1 00 | 1 20 |
| | | | 50 mg | Bottle of 100 tabs | per bottle | 8 80 | 10 56 |
| | | | 100 mg | Bottle of 100 tabs | per bottle | 2 50 | 3 00 |
| | | | | Bottle of 1000 tabs | per bottle | 15 85 | 19 02 |
| | | | 500 mg | Bottle of 20 tabs | per bottle | 2 65 | 3 81 |
| | | | | Bottle of 100 tabs | per bottle | 8 80 | 10 56 |
| 5 | Bengal Chemical | VITACIN | 200 mg | 50 tabs pack | per back | 3 40 | 4 10 |
| 6 | Dey s Med cal | | 50 mg | T n of 1000 s Tabs | per tin | 9 00 | 10 80 |
| | | | 100 mg | Tin of 1000 s Tabs | per tin | 15 00 | 18 00 |
| 7 | Cyanamid | CHEWCEE | 500 mg | 10×10 s pack | per pack | 18 00 | 22 50 |
| 8 | Kemp & Co | | 100 mg | 100 tabs pack | per pack | 2 75 | 3 30 |
| 9 | Albert David | | 100 mg | Bottle of 20 s Tabs | per bottle | 0 70 | 0 84 |
| | | | | Bottle of 25's Tabs | per bottle | 0 85 | 1 02 |
| | | | | Bottle of 50's Tabs | per bottle | 1 60 | 1 92 |
| | | | | Bottle of 100 s Tabs | per bottle | 3 05 | 3 66 |
| | | | | Bottle of 500 s Tabs | per bottle | 13 15 | 15 18 |
| | | | | Bottle of 1000 s Tabs | per bottle | 25 00 | 30 00 |
| | | | | Bottle of 20 s Tabs | per bottle | 1 50 | 1 80 |
| | | | 500 mg | Bottle of 50 s Tabs | per bottle | 3 50 | 4 20 |
| | | | | Bot le of 100 s Tab | per bottle | [illegible] | 8 10 |
| | | | | Bottle of 500 s Tabs | per bottle | 32 00 | 38 40 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 17 | Glaxo Labs | CELIN | 50 mg/tab | 100 s pack | per pack | 1 87 | 2 31 |
| | | | | 1000 s pack | per pack | 13 91 | 17 16 |
| | | | 100mg/tab | 100 s pack | per pack | 2 68 | 3 31 |
| | | | | 1000 s pack | per pack | 21 41 | 26 41 |
| | | | 500 mg/tab | 20 s pack | per pack | 2 68 | 3 31 |
| | | | | 500 s | per pack | 52 40 | 64 40 |
| 18 | Alemb c Chem cal | CIVINAL | 50 mg/tab | 1000 s | per pack | 10 90 | 13 62 |
| 19 | Roche Products | RIDOXON | 50 mg/tab. | 20 s pack | per pack | 0 91 | 1 12 |
| | | | | 100 s pack | per pack | 3 90 | 4 81 |
| | | | | 250 s pack | per pack | 9 29 | 11 46 |
| | | | 200 mg/tab | 20 s pack | per pack | 2 83 | 3 49 |
| | | | | 100 s pack | per pack | 12 49 | 15 41 |
| | | | | 100 s pack | per pack | 16 28 | 20 09 |
| | | | 500 mg/tab | 10×10 s pack | per pack | 19 22 | 23 72 |
| | | | | 500 s pack | per pack | 72 59 | 09 59 |
| 20 | Mac Labs | SCORMAC | 5 gm. | Pack of 10 Bot of 10 tabs each | per pack | 12 75 | 15 00 |
| | | | | Bottle of 100 tabs | per pack | 8 7 | 9 50 |
| | *Sulphad azine Tabs* | | | | | | |
| 1 | May & Baker | | 0 5 gm/tab | 10×10 pack | per pack | 5 31 | 6 34 |
| | | | | 50×10 pack | per pack | 26 69 | 31 69 |
| 2 | Mac Labs | | 0 166 mg/tab | 500 s | per pack | 28 00 | |
| 3 | Boots | | 0 5 gm/tab | Tin of 1000's | per t n | 45 00 | 52 94 |
| 4 | Anglo French | | 0 5 gm/tab | Tin of 1000 s | per tin | 38 00 | 42 00 |
| 5 | Cyanamid | | 0 5 gm/tab | 500 s pack | Per pack | 25 00 | 31 25 |
| 6 | Kemp & Co | | 0 5 gm/tab | 500 s Pack | per pack | 21 00 | 25 20 |
| 7 | South Ind a Res Inst | | 0 5 gm/tab | 1000 s pack | per pack | 45 00 | 51 75 |

TABLE 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 8 | Martin & Harris | .. | 0.5 gm/tab. | 1000's pack | per pack | 38.68 | 48.50 |
| | | | | 5000's pack | per pack | 200.00 | 229.00 |
| 9 | OPIL | .. | .. | 250's pack | per pack | 12.50 | 13.75 |
| 10 | Zandu | .. | 0.5 mg/tab. | 100's pack | per pack | 4.50 | 5.30 |
| 11 | Khandelwal Labs | .. | 0.5 gm/tab. | 500's pack | per pack | 25.00 | 28.00 |
| 12 | Shetty's Pharmaceutical | .. | 0.5 gm/tab. | 1000's pack | per pack | .. | 45.00 |
| | *Sodium Penicillin G. Inj.* | | | | | | |
| 1 | Hindustan Antibiotics | .. | 2 lac U/ml. | Single vial | per vial | 0.42 | 0.45 |
| | | | 5 lac U/ml. | Single vial | per vial | 0.61 | 0.65 |
| 2 | Alembic Chemical | .. | 10 lac U/ml. | 5 vials pack | per pack | 0.94 | 1.00 |
| | | | 2 lac U/ml. | 5 vials pack | per pack | 2.15 | 2.30 |
| | | | 5 lac U/ml. | 5 vials pack | per pack | 3.12 | 3.39 |
| | | | 10 lac U/lm. | 5 vials pack | per pack | 4.80 | 5.60 |
| 3 | Merck Sharp | ISOPEN—2 | 2 lac U/ml. | 10 vials pack | per pack | 4.20 | 4.67 |
| | | ,,—5 | 5 lac U/ml. | 10 vials pack | per pack | 6.10 | 6.78 |
| | | ,,—10 | 10 lac U/ml. | 10 vials pack | per pack | 9.40 | 10.44 |
| 4 | Glaxo Labs | CRYSTAPEN | 2 lac U/ml. | 5 vials pack | per pack | 2.15 | 2.38 |
| | | | | 50 vials pack | per pack | 21.50 | 23.80 |
| | | | 5 lac U/ml. | 5 vials pack | per pack | 3.12 | 3.46 |
| | | | | 50 vials pack | per pack | 31.20 | 34.60 |
| | | | 10 lac U/ml. | 5 vials pack | per pack | 5.15 | 5.70 |
| | | | | 50 vials pack | per pack | 51.50 | 57.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 Sarabhai Chemicals | | 2 lac U/ml | Box of 10 vials | Per Box | 4 29 | 4 76 |
| | | 5 lac U/ml | Box of 10 vials | Per Box | 6 23 | 6 91 |
| | | 10 lac U/ml | Box of 10 vials | Per Box | 10 31 | 11 40 |
| 6 Dey's Medical | | 5 lac U/ml | Single Dose | per Dose | 0 62 | 0 74 |
| | | 10 lac U/ml | Single Dose | per Dose | 1 03 | 1 14 |
| *Penicillin Tabs.* | | | | | | |
| 1 Hindustan Antibiotics | | 65 mg | 12 Tabs Box | per box | 1 75 | 1 85 |
| | | | 36 Tabs. Box | per box | 4 75 | 5 00 |
| 2 Alembic Chemical | | 2 MU | 12 Tabs. Box | per box | 2 00 | 2 50 |
| 3 Standard Pharmaceuticals | STANPEN | 2 lacs units | 48 Tabs (in 8 strips each) | per 48 Tabs | 8 60 | 10 00 |
| 4 Pfizer | PENOCIN | 65 mg | 100 Tabs pack | per pack | 19 59 | 20 66 |
| | PENOCIN FORTE | 130 mg | 100 Tabs. pack | per pack | 37 25 | 39 28 |
| 5 May & Baker | CFACYN "k" | 62 5 mg | 10×10 Tabs pack | per pack | 17 38 | 20 28 |
| | | 125 mg | 10×10 Tabs pack | per pack | 31 70 | 37 90 |
| 6 Glaxo Labs. | CRYSTAPEN | 65 mg | 10 Tabs pack | per pack | 1 92 | 2 13 |
| | | 65 mg | 100 Tabs pack | per pack | 17 64 | 19 56 |
| | | 125 mg | 10 Tabs, pack | per pack | 3 42 | 3 80 |
| | | 125 mg | 100 Tabs, pack | per pack | 32 20 | 35 70 |
| 7 Sarabhai Chemicals | PENTIDS | 2 lacs units | 48 Tabs pack | per pack | 8 63 | 9 57 |
| 8 Zandu | | 0 2 lac units | 100 Tabs, pack | per pack | 16 83 | 19 80 |
| *Streptomycin Sulphate Injection* | | | | | | |
| 1 Hindustan Antibiotics | | 1 gm. | Single vial | per vial | 0 60 | 0 71 |
| 2 Merk Sharp | MERSTREP | 1 gm | 10 vials pack | per pack | 5 80 | 6 44 |
| 3 Alembic Chemical | | 1 gm | 5 vials pack | per pack | 3 35 | 3 73 |
| 4 Glaxo Labs | COMYCIN | 1 gm | 5×1 g vials | per 5 vials | 3 42 | 3 80 |
| | | | 50×1 g vials | 50 vials | 34 20 | 38 00 |
| | | | 5×2 g vials | 5 vials | 5 36 | 5 96 |

TABLE 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 5 | Pfizer | STREPTONEX | 1 gm. | 25 vials pack | per pack | 15.58 | 16.40 |
| 6 | Sarabhai Chemicals | AMBYSTRYN | 1 gm. | 10 vials Box | per Box | 6.84 | 7.00 |
| 7 | Dey's Medical | .. | 1 gm. | Single vial | per vial | 0.59 | 0.71 |
| | *Di-hydro Streptomycin Sulphate Injection* | | | | | | |
| 1 | Merck Sharp | DYSTREP | 1 gm. | 10 vials pack | per pack | 5.80 | 6.44 |
| 2 | Sarabhai Chemicals | .. | 1 gm. | 10 vials pack | per pack | 5.92 | 6.56 |
| | *Chloramphenicol Caps* | | | | | | |
| 1 | Parke-Davis | CHLORMYCETIN | 250 mg. | 12 caps pack | per pack | 7.26 | 9.51 |
| | | KAPSEALS | 100 mg. | 12 caps pack | per pack | 3.63 | 4.75 |
| 2 | Boehringer-Knoll | CHLORAMPHYCIN | 250 mg. | 12 caps pack | per pack | 6.13 | 7.13 |
| | | | | 100 caps pack | per pack | 37.32 | 43.52 |
| 3 | May & Baker | EMBACETIN | 250 mg. | 12 caps pack | per pack | 5.74 | 6.34 |
| | | | | 100 ,, ,, | Do | 36.30 | 42.30 |
| 4 | Alembic Chemical | ALCOPHENICOL | 250 mg. | 12 ,, ,, | Do | 5.45 | 6.81 |
| | | | | 100 ,, ,, | Do | 38.15 | 47.68 |
| 5 | CIPLA | CIBLAMYCETIN | 250 mg. | 12 ,, ,, | Do | 4.80 | 5.70 |
| | | | | 500 ,, ,, | Do | 133.44 | 150.00 |
| 6 | Dey's Medical | ENTERO MYCETIN | 250 mg. | Bottle of 12's | per Bottle | 5.55 | 6.59 |
| | | | | Strip of 100's | per Stip | 37.10 | 44.04 |
| | | | | Strip of 500's | Do | 188.34 | 217.69 |
| | | | | Strip of 1000's | Do | 365.09 | 438.49 |
| 7 | Cadila Labs. | .. | 250 mg. | 1000 Caps pack | per pack | 200.00 | 230.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 OPIL | OPIMYCETIN | 250 mg | 12 Caps pack | per pack | 4 00 | 4 95 |
| | | | 100 ,, ,, | Do | 28 00 | 34 93 |
| | | | 250 ,, ,, | Do | 60 00 | 74 17 |
| | | | 500 ,, ,, | Do | 115 00 | 142 16 |
| | | | 1000 ,, ,, | Do | 225 00 | 272 15 |
| 9 Gurco Pharma | GURCOMYCETIN | 250 mg | 12 ,, ,, | Do | 3 20 | 3 75 |
| | | | 100 ,, ,, | Do | 25 60 | 30 00 |
| | | | 500 ,, ,, | Do | 122 60 | 148 75 |
| | | | 1000 ,, ,, | Do | 239 98 | 281 25 |
| | | 185 mg. | 12 ,, ,, | Do | 2 13 | 2 50 |
| | | | 100 ,, ,, | Do | 14 93 | 17 50 |
| | | | 1000 ,, ,, | Do | 188 80 | 156 25 |
| 10 Ranbaxy Labs | RANPHENICOL | 250 mg | 12 ,, Bottle | per Bottle | 5 59 | 6 89 |
| | | | 100 ,, ,, | Do | 36 55 | 45 05 |
| | | | 500 ,, Tin | per Tin | 178 18 | 219 62 |
| | | | 1000 ,, ,, | Do | 34 23 | 427 98 |
| *Chloramphenicol Tabs* | | | | | | |
| 1 Mac Labs | KEMICETIN | 250 mg | Bottle of 12's | per Bottle | 4 93 | 5 80 |
| | | | Bottle of 100's | Do | 38 25 | 45 00 |
| | | | Bottle of 500's | Do | 182 75 | 215 00 |
| 2 Unichem Labs | UNIMYCETIN VF | 0 25 g | 12 Tab Pack | per pack | 4 00 | 4 60 |
| | | | 100 ,, ,, | Do | 30 00 | 34 60 |
| | | | 250 ,, ,, | Do | 69 00 | 79 35 |
| 3 Gujarat Phramaceutical | THENICHLOR | 0 25 g | 12 ,, ,, | Do | 4 40 | 4 65 |
| | | | 100 ,, ,, | Do | 25 00 | 27 50 |
| *Chloramphenicol Suspension (Powder)* | | | | | | |
| 1 Gurco Pharma | GURCOMYCETIN PALMITATE | 125 mg | 50 gm pack | per pack | 4 27 | 5 00 |
| | | | 500 gm pack | Do | 32 00 | 37 50 |

TABLE 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 2 | Zandu | ZANDU MYCETIN | .. | 60 ml. Bottle | | per Bottle | 4.67 | 5·05 |
| | | | 100 mg. | Single vial | | per vial | 2.17 | 2.43 |
| | | | 250 mg. | Single vial | | per vial | 6.73 | 7.53 |
| | *Tetracycline Injection*— | | | | | | | |
| 1 | Pfizer | TETRACIN | | 100 Caps | pack | per pack | 103.02 | 115.13 |
| | | | | 4 ,, | ,, | Do | 3.74 | 4.61 |
| | | | 250 mg. | 12x4 ,, | ,, | Do | 44.80 | 55.26 |
| | *Tetracycline Caps.*— | | | | | | | |
| 1 | Pfizer | TETRACYN | 250 mg. | 4 ,, | Bottle | per Bottle | 3.61 | 4.25 |
| | | | | 100 ,, | ,, | Do | 86.00 | 100.00 |
| 2 | Merck Sharp | TRYCIN | 0.25 gm. | 4 ,, | Pack | per Pack | 4.80 | 5.43 |
| | | | | 4x4 ,, | ,, | Do | 14.25 | 17.81 |
| | | | | 100 ,, | ,, | Do | 87.00 | 108.75 |
| 3 | Mac Labs | TETRAMAC | 250 mg. | 12x4 ,, | ,, | Do | 45.49 | 56.11 |
| 4 | Alembic Chemical | ALCYCLIN | | Strip of 5x4 caps | | per strip | 18.10 | 21.72 |
| | | | 250 mg. | Bottle of 8's | | per Bottle | 7.74 | 9.39 |
| 5 | Sarabhai Chemicals | STECLIN | 250 mg. | Strip of 100's | ,, | per Strip | 92.82 | 110.21 |
| 6 | Hoechst Pharmaceuticals | HOSTACYCLINE | Do | 4 caps | Pack | per Pack | 3.86 | 4.82 |
| 7 | Dey's Medical | SUBAMYCIN | .. | 12x4 | ,, | Do | 42.50 | 53.12 |
| | | | | 24x4 | ,, | Do | 83.70 | 104.62 |
| 8 | Cyanamid | ACHROMYCIN | | 25x4 | ,, | Do | .. | .. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ACHROMYCIN V | .. | | | | | |
| | Capsules | | 4 caps | Pack | per pack | 3 06 | 4 02 |
| | | | 12x4 | ,, | Do | 42 50 | 53 12 |
| | | | 24x4 | ,, | Do | 83 70 | 104 62 |
| | | | 25x4 | ,, | Do | . | . |
| | SV Caps | | 4 | ,, | Do | 4 02 | 3 02 |
| | | | 12x4 | ,, | Do | 42 50 | 55 25 |
| | | | 25x4 | ,, | Do | .. | |
| 9 Opil | OPICYCLINE | 250 mg | 4 caps | pack | Do | 3 70 | 4 56 |
| | | | 100 | ,, ,, | Do | 75 00 | 88 15 |
| | | | 250 | ,, ,, | Do | 180 00 | 212 8 |
| | | | 1000 | ,, ,, | Do | 650 00 | 768 62 |
| 10 Gurco Pharma | VIRSAMYCIN | 250 mg. | 4 | ,, ,, | Do | 2 99 | 3 50 |
| | | | 8 | ,, ,, | Do | 5 76 | 6 75 |
| | | | 100 | ,, ,, | Do | 64 00 | 75 00 |
| 11 Ranbaxy Labs | RANCYCLIN | 250 mg | 5x4 | Caps box | per Box | 20 16 | 24 85 |
| | | | 25x4 | ,, ,, | Do | 96 97 | 119 53 |
| 12 Khandelwal Labs. | TETRAPLON | 250 mg | 4 | Caps Bottle | per Bottle | 8 20 | 3 68 |
| | | | 25x4 | ,, Box | per box | 80 00 | 92 00 |
| *Oxytetracycline Caps* | | | | | | | |
| 1 Pfizer | TERRAMYCIN | 250 mg | 100 (25x4) | caps | per Pack | 103 02 | 115 13 |
| *Chlor Tetracycline Caps* | | | | | | | |
| 1 Hindustan Antibiotics | .. | 250 mg | 4 | Caps | per Pack | 2 95 | 3 10 |
| | | | 100 | Do | ,, | 63 00 | 68 25 |
| 2 Cyanamid | AUREOMYCIN | | 4 | Caps pack | 3 86 | 2 89 | 4 82 |
| | | | 12x4 | ,, | 42 50 | 31 87 | 53 12 |
| | | | 25x4 | ,, | | | 65 40 |

TABLE 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| | *Demethyl Tetracycline Caps* | | | | | | |
| 1 | Cyanamid | LEDERMYCIN | 150 mg. | 4 caps pack | per pack | 4.19 | 5.24 |
| | | | | 12x4 ,, ,, | Do | 46.19 | 57.74 |
| | | | | 24x4 ,, ,, | Do | 90.98 | 113.72 |
| | | | | 25x4 ,, ,, | Do | .. | .. |
| | | | 300 mg. | 2 ,, ,, | Do | 4.19 | 5.24 |
| | | | | 12x2 ,, ,, | Do | 46.19 | 57.74 |
| | | | | 24x2 ,, ,, | Do | 90.98 | 113.72 |
| | | | | 25x2 ,, ,, | Do | .. | .. |
| | | | | 50x2 ,, ,, | Do | .. | .. |
| | *Amodiaquin Tabs* | | | | | | |
| 1 | Parke-Davis | CAMOQUIN | | 250 Tabs Pack | per pack | 31.44 | 41.19 |
| | | | 0.2 gm. | Strip 150's | per strip | 16.50 | 19.80 |
| | | | 0.2 gm. | Strip 300 's | per strip | 32.00 | 38.40 |
| 2 | Albert David* | .. | | 25x4 Tabs Pack | per pack | 8.55 | 10.15 |
| | | | 200 mg. | 125x4 ,, ,, | per pack | 42.75 | 50.75 |
| | *Chloroquin Tabs* | | | | | | |
| 1 | May & Baker | NIVAQUINE | | Box of 100 tabs | per box | 8.00 | 9.60 |
| | | | 0.25 g. | Box of 1000 tabs | per box | 75.00 | 90.00 |
| 2 | Bengal Immunity* | : | | 10 Tabs Pack | per pack | 1.10 | 1.15 |
| | | | 0.25 g. | 100 Tabs Pack | per pack | 8.20 | 8.95 |
| 3 | Unichem Labs | UNIQUIN | | Bot. of 100 tabs | per bottle | 9.50 | 11.15 |
| | | | 250 mg. | Bot. of 500 tabs | per bottle | 37.62 | 44.25 |
| 4 | Martin & Harris | : | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | Zandu . . . . | | 0 25 g | 25 Tabs Pack | per pack | 2 55 | 3 00 |
| | | | | 100 ,, ,, | Do | 9 35 | 11 00 |
| | | | | 250 ,, ,, | Do | 21 25 | 25 00 |
| | | | | 1000 ,, ,, | Do | 76 50 | 90 00 |
| 6 | Shettys' Pharmaceutical | | 250 mg | 500 ,, ,, | Do | . | 70 00 |
| 7 | Gujarat Pharmaceutical . | | 0 25 g | 500 ,, ,, | Do | 45 00 | 49 50 |
| | *Iodo-chlor hydroxy-quinoline Tabs* | | | | | | |
| 1 | Alembic Chemical* . | ALCHLOQUIN | 250 mg | 500 tabs pack | per pack | 20 00 | 25 00 |
| | | | | 1000 tabs pack | per pack | 37 85 | 47 31 |
| 2 | Bengal Chemical . . | ENTEROKIN | 0 25 g. | 100 tabs in strip | per strip | 5 10 | 6 00 |
| | | | | 500 tabs in strip | per strip | 23 00 | 28 00 |
| 3 | Smith Stanistreet . . | STANQUINATE | 0 25 g | 10 x 10 Strip | per strip | 9 30 | 11 60 |
| | | | | 500 s Bottle | per bottle | 30 00 | 37 00 |
| 4 | Unichem . .. . . | | 0 25 g | 500 tabs pack | per pack | 26 25 | 28 75 |
| 5 | Dey's Medical . . | DEQUINOL | 0 25 g | 500's strip | per strip | 18 41 | 27 30 |
| 6 | Albert David* . | QUINOFORM | 0 25 g | 20 s Bottle | per bottle | 1 10 | 1 32 |
| | | | | 100's Bottle | per bottle | 4 00 | 4 80 |
| | | | | 500's Bottle | per bottle | 16 00 | 19 20 |
| | | | | 1000's Bottle | per bottle | 30 00 | 38 00 |
| 7 | Martin & Harris . . | | 250 mg | 1000's Bottle | per bottle | 35 00 | 41 15 |
| 8 | East India | ENTROQINOL | 250 mg | 20's Pack | per Pack | 1 85 | 2 25 |
| 9 | Therapeutic Pharmaceuticals | AMIDOCLOR | 0 25 gm | 500's Pack | per pack | 20 40 | 24 00 |
| | | | | 1000's pack | per pack | 38 25 | 45 00 |
| 10 | Zandu . . | | 0 25 gm | 20 s Pack | per Pack | 1 45 | 1 70 |
| | | | | 100 s Pack | per Pack | 3 82 | 4 50 |
| | | | | 250 s Pack | per pack | 6 80 | 8 00 |
| | | | | 1000 s Pack | per Pack | 25 50 | 30 00 |

TABLE 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| | *Di-iodo-hydroxy-quinoline Tabs* | | | | | | |
| 1 | CIPLA . . . . | DIODOXYLIN | 0.21 gm. | 25 tabs pack | per pack | 1.64 | 1.94 |
| | | | | 100 tabs Pack | per pack | 4.50 | 5.40 |
| | | | | 500 tabs Pack | per pack | 17.38 | 20.78 |
| 2 | Bengal Immunity . . | DINOQUIN | 0.25 gm. | 10 strip × 10 tabs | Box of 100 tabs | 3.55 | 4.26 |
| | | | | 50 strips × 10 tabs | Box of 500 tabs | 14.10 | 16.92 |
| | | | | 100 strips × 10 tabs | Box of 1000 tabs | 26.40 | 31.68 |
| 3 | Cadila Labs . . . | DIOQUIN | 213 mg. | 500 Tabs pack | per pack | 12.00 | 13.80 |
| | | | | 1000 Tabs pack | per pack | 20.00 | 23.00 |
| | | | | 5000 Tabs pack | per pack | 90.00 | 103.50 |
| 4 | Zandu . . . . | .. | 0.21 g. | 20 Tabs pack | per pack | 0.85 | 1.00 |
| | | | | 100 Tabs Pack | per pack | 3.40 | 4.00 |
| | | | | 250 Tabs Pack | per pack | 6.80 | 8.00 |
| | | | | 1000 Tabs Pack | per pack | 25.50 | 30.00 |
| | | | | 1000 Tabs Pack | per pack | .. | 21.00 |
| 5 | Shetty's Pharmaceutical . | .. | 250 mg. | 30 Tabs Bottle | per bottle | 1.20 | 1.40 |
| | | | | 100 Tabs Bottle | per bottle | 3 00 | 3.45 |
| | | | | 1000 Tabs Bottle | per bottle | 25.00 | 28.75 |
| 6 | OPIL . . . . | .. | .. | 100 Tabs Pack | per pack | 16.30 | 18.22 |
| | *Chlorpropamide Tabs* | | | | | | |
| 1 | Pfizer . . . . | DIABINESE | 100 mg. | 100 Tabs Pack | per pack | 35.14 | 38.28 |
| | | | 250 mg. | 30 Tabs Pack | per pack | 4.04 | 4.75 |
| 2 | Bengal Chemical . . | DI .BINOL | 100 mg. | 100 Tabs Pack | per pack | 11.48 | 13.50 |
| | | | 250 mg. | 100 Tabs Pack | per pack | 25.50 | 30.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 Kemp & Co | *DIABECHLOR* | 200 mg | 30 Tabs Pack | per pack | 4 50 | 5 40 |
| | | | 100 Tabs Pack | per pa k | 13 50 | 15 60 |
| | | | 500 Tabs Pack | per pack | 55 00 | 66 00 |
| 4 Albert Dav d* | DIALANE | 0 25 gm | 20 Tabs Bottle | per bo tle | 3 50 | 4 20 |
| | | | 100 Tabs Bottle | per bottle | 16 00 | 19 20 |
| | | | 500 Tabs Bottle | per bottle | 78 00 | 93 60 |
| | | | 1000 Tabs Bottle | per bottle | 150 00 | 180 00 |
| 5 Haffk ne | | 0 25 gm | 100 Tabs Pack | per pack | 14 00 | |
| | | | 50 Tabs Pack | per pack | 8 00 | |
| 6 Gujarat Pharmaceut cals | CHLORINESE | 0 25 g | 30 Tabs Pack | per pack | 4 50 | 5 05 |
| | | | 100 Tabs Pack | per pack | 13 00 | 14 30 |
| *TOLBUTAMIDE TABS* | | | | | | |
| 1 Un chem Labs | UNITOLBID | 0 25 g | 25 Tabs Pack | per Pack | 4 00 | 4 60 |
| | | | 100 Tabs Pack | per Pack | 15 00 | 17 25 |
| | | | 500 Tabs Pack | per Pack | 70 00 | 80 50 |
| 2 Hoechst | RASTINON | 0 5 g | 10×10 Tabs Str p | per Str p | 21 95 | 26 34 |
| | | | 100×10 Tabs Strip | per Str p | 183 00 | 219 60 |
| | | | 1000 Tabs Pack | per pack | | 219 60 |
| | J | | 5 × 20 ml box | per box | 15 75 | 18 90 |
| 3 Cad la Labs | DIATOL | 500 mg | 40 Tabs Pack | per pack | 6 60 | 7 60 |
| | | | 100 Tabs Pack | per pack | 14 00 | 16 10 |
| | | | 500 Tabs Pack | per pack | 65 00 | 74 75 |
| | | | 1000 Tabs Pack | per pack | 120 00 | 138 00 |
| 4 Albert Dav d* | | 0 5 gm | 25 Tabs Bottle | per bottle | 4 00 | 4 80 |
| | | | 50 Tabs Bottle | per bottle | 8 00 | 9 60 |
| | | | 100 Tabs Bottle | per bottle | 15 00 | 18 00 |
| | | | 500 Tabs Bottle | per bottle | 70 00 | 84 00 |

TABLE 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| | *Insulin Inj.* | | | | | | |
| 1 | Alembic Chemical | .. | 0.40 m.u. per ml. | 10 ml. vial | per vial | 3.40 | 4.25 |
| | | | 0.81 m.u. per ml. | 10 ml. vial | per vial | 6.50 | 8.12 |
| 2 | Boots | .. | 40 units per ml. | 10 ml. vial | per vial | 3.75 | 4.69 |
| | | | 80 units per ml. | 10 ml. vial | per vial | 7.25 | 9.06 |
| | | | 40 units per ml. | 10 ml. vial | per vial | 6.24 | 7.01 |
| 3 | Pfizer | INSULIN-NOVO LENTE | 40 units per ml. | 10 ml. vial | per vial | 3.75 | 4.50 |
| 4 | Bengal Immunity * | .. | 40 units per ml. | 10 ml. vial | per vial | 3.84 | 4.77 |
| 5 | Burroughs Wellcome | .. | 40 units per cc. | vial of 10 cc. | per vial | 3.75 | 4.69 |
| | | .. | 80 units per cc. | vial of 10 cc. | per vial | 7.25 | 9.06 |
| 6 | British Drug House | | 40 units per ml. | 10 ml. | per vial | 3.60 | 4.15 |
| 7 | Unichem Labs. | .. | 40 units per ml. | 10 ml. | per vial | 3.40 | 4.08 |
| 8 | Kemp & Co. | .. | 40 units/ml. | 10 ml. vial | per vial | 5.63 | 7.00 |
| | *Insulin Zinc Suspension Inj.* | | | | | | |
| 1 | Boots | .. | 40 units /ml. | 10 ml. al | per vial | 8.50 | 6.87 |
| 2 | Burroughs Wellcome | .. | 40 units per cc. | 10 ml. vial | per vial | 5.63 | 6.98 |
| | | .. | 80 units per cc. | 10 ml. vial | per vial | 11.26 | 13.95 |
| 3 | British Drug House | | 40 units/ml. | 10 ml. vial | per vial | 5.20 | 5.95 |
| 4 | Unichem Labs. | LENTE INSULIN UNI DURA | | - | | | |
| | *Insulin Protamine Zinc Inj.* | | | | | | |
| 1 | Boots | .. | 40 units/ml. | 10 ml. vial | per vial | 4.50 | 5.62 |
| 2 | Burroughs Wellcome | .. | 40 units ml. | 10 ml. vial | per vial | 4.60 | 5.73 |
| 3 | British Drug House | .. | 40 units/ml. | 10 ml. vial | per vial | 4.50 | 5.62 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | Unichem Labs | | 40 units/ml | 10 ml vial | per vial | 4 20 | 4 80 |
| 5 | Alembic Chemical | | 40 un ts/ml | 10 ml vial | per vial | 4 00 | 5 00 |
| | *Insulin Isophane N P H Inj* | | | | | | |
| 1 | Boots | | 40 un ts/ml | 10 ml vial | per vial | 6 50 | 8 12 |
| 2 | Alemb c Chemical | | 40 units/ml | 10 ml vial | per vial | 5 60 | 7 00 |
| 3 | Burroughs Wellcome | | 40 un ts/ml | 10 ml vial | per vial | 6 50 | 8 12 |
| 4 | Kemp & Co. | | 40 units/ml | 10 ml vial | per vial | 4 90 | 5 88 |
| | *I N H Tabs* | | | | | | |
| 1 | Mac Labs | MACUHZIDE | 0 40 gms | 15 tabs pack | per pack | 2 55 | 3 00 |
| | | | | 100 tabs pack | per pack | 15 30 | 18 00 |
| 2 | Glaxo Labs. | PELAZID | 50 mg | 100 tabs pack | per pack | 1 69 | 2 11 |
| | | | | 1000 tabs pack | per pack | 12 28 | 15 28 |
| | | | 100 mg | 100 tabs pack | per pack | 2 56 | 3 19 |
| | | | | 1000 tabs pack | per pack | 20 47 | 25 47 |
| 3 | Alemb c Chem cal | ALZIDE | 100 grms. | 100 tabs pack | per pack | 2 60 | 3 25 |
| | | | | 1000 tabs pack | per pack | 20 60 | 25 75 |
| 4 | Biological Evans | | 50 mg | 100 tabs pack | par pack | 1 54 | 1 84 |
| | | | | 1000 tabs pack | per pack | 8 20 | 9 10 |
| | | | | 5000 tabs pack | per pack | 38 87 | 42 87 |
| | | | 100 mg | 100 tabs pack | per pack | 2 36 | 2 82 |
| | | | | 1000 tabs pack | per pack | 14 35 | 17 15 |
| | | | | 5000 tabs pack | per pack | 66 62 | 79 62 |
| 5 | Sarabhai Chemicals | NYDRAZID | 50 mg | 100 tabs. pack | per pack | 2 04 | 2 30 |
| | | | | 1000 tabs pack | per pack | 12 40 | 16 43 |
| | | | 100 mg | 100 tabs pack | per pack | 2 82 | 3 51 |
| | | | | 1000 tabs pack | per pack | 20 79 | 25 79 |

## Table 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 6 | Bengal Immunity* | .. | 50 mg. | 100 tabs. pack | per pack | 1.15 | 1.38 |
| | | | | 1000 tabs. pack | per pack | 8.00 | 9.60 |
| | | | 100 mg. | 100 tabs. pack | per pack | 1.70 | 2.04 |
| | | | | 1000 tabs. pack | per pack | 14.00 | 16.80 |
| | | | | 5000 tabs. pack | per pack | 68.00 | 81.60 |
| 7 | Bengal Chemical | .. | 50 mg. | 1000 tabs. pack | per pack | 10.20 | 12.00 |
| | | | 100 mg. | 1000 tabs. pack | per pack | 19.50 | 23.40 |
| 8 | Smith Stanistreet | .. | 50 mg. | 100 tabs. pack | per pack | 2.20 | 2.75 |
| | | | | 1000 tabs. pack | per pack | 15.24 | 19.05 |
| 9 | Chemo Pharma | .. | 100 mg. | 100 tabs. pack | per pack | 3.30 | 4.12 |
| | | | | 1000 tabs. pack | per pack | 24.36 | 30.45 |
| 10 | Unichem Labs. | UNIZYDE | 100 mg. | 100 tabs. pack | per pack | 2.85 | 3.10 |
| | | | | 1000 tabs. pack | per pack | 21.00 | 23.00 |
| | | | 50 mg. | 100 tabs. pack | per pack | 1.50 | 1.80 |
| | | | | 1000 tabs. pack | per pack | 11.00 | 13.20 |
| 11 | Day's Medical | .. | 100 mg. | 100 tabs. pack | per pack | 2.75 | 3.30 |
| | | | | 1000 tabs. pack | per pack | 20.00 | 24.00 |
| 12 | South India Res. Inst. | .. | 50 mg. | 1000 tabs. pack | per pack | 10.00 | 11.50 |
| | | | 100 mg. | 1000 tabs. pack | per pack | 18.00 | 20.70 |
| 13 | Albert David | .. | 50 mg. | 50 tabs. pack | per pack | 0.60 | 0.72 |
| | | | | 100 tabs. pack | per pack | 1.00 | 1.20 |
| | | | | 500 tabs. pack | per pack | 4.75 | 5.70 |
| | | | | 1000 tabs. pack | per pack | 8.50 | 10.20 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | 100 mg | 50 tabs pack | per pack | 1 20 | 1 44 |
| | | | | 100 tal s pack | per pack | 2 00 | 2 40 |
| | | | | 500 tabs pack | per pack | 9 00 | 10 80 |
| | | | | 1000 tabs pack | per pack | 17 00 | 20 40 |
| 14 | Mart n & Harr s | | 50 mg | 100 tabs pack | per pack | 1 34 | 1 60 |
| | | | | 1000 tabs pack | per pack | 11 56 | 13 60 |
| | | | 100 mg | 100 tabs pack | per pack | 2 58 | 3 05 |
| | | | | 1000 tabs pack | per pack | 20 42 | 24 00 |
| 15 | Haffkine | | | | | | |
| 16 | Cad'la Labs | CADIZID | 100 mg | 100 tabs pack | per pack | 2 60 | 3 00 |
| | | | | 1000 tabs pack | per pack | 20 50 | 23 55 |
| 17 | OPIL | | 50 mg | 1 100 tabs pack | per pack | 1 35 | 1 55 |
| | | | | 500 tabs pack | per peak | 5 50 | 6 33 |
| | | | 100 mg | 100 tabs pack | per pack | 2 40 | 2 75 |
| | | | | 500 tabs pack | per pack | 9 50 | 10 93 |
| 18 | Therapeut c Pharmaceut cals | | 50 mg | 1000 tabs pack | per pack | 11 30 | 13 30 |
| | | | | 5000 tabs pack | per pack | 51 00 | 60 00 |
| | | | | 10000 tabs pack | per pack | 100 30 | 118 00 |
| | | | 0 1 gm | 100 tabs pack | per pack | 2 07 | 2 45 |
| | | | | 1000 tabs pack | per pack | 20 40 | 24 00 |
| | | | | 5000 tabs pack | per pack | 99 87 | 117 50 |
| | | | | 10000 tabs pack | per pack | 195 50 | 230 00 |
| 19 | Gurco Pharma | GURCOZID | 50 mg | 1000 tabs pack | per pack | 10 23 | 12 50 |
| | | | 100 mg | 1000 tabs pack | per pack | 19 40 | 22 50 |
| 20 | Zandu | ISOLIDE | 50 mg | 250 tabs pack | per pack | 2 97 | 3 50 |
| | | | | 1000 tabs pack | per pack | 11 05 | 13 00 |
| | | | 100 mg | 50 tabs pack | per pack | 1 45 | 1 70 |
| | | | | 250 tabs pack | per pack | 5 52 | 6 50 |
| | | | | 1000 tabs pack | per pack | 20 82 | 24 50 |

TABLE 24.4—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 21 | Shetty's Pharmaceutical | .. | 100 mg. | 1000 tabs. pack | per pack | .. | 15.00 |
| 22 | Gujarat Pharmaceuticals | .. | 50 mg. | 1000 tabs. pack | per pack | 12.60 | 15.00 |
| | *P. A. S. Granules* | | | | | | |
| 1 | Pfizer | PASDUMEX | 70% | 100 gm. pack | per pack | 5.68 | 6.37 |
| 2 | Biological Evans | .. | 65% | 110 gm. pack | per pack | 4.00 | 4.90 |
| | | | | 250 gm. pack | per pack | 9.22 | 11.02 |
| | | | | 1000 gm. pack | per pack | 35.87 | 42.87 |
| 3 | Hoechst | AMINOX | 48.7% | 100 gm. pack | per pack | 4.25 | 5.10 |
| | | | | 250 gm. pack | per pack | 9.90 | 11.88 |
| | | | | 500 gm. pack | per pack | 24.00 | 28.80 |
| 4 | Albert David* | .. | .. | Manufacture only against tender enquiries from Govt. Semi-Govt. Institutions. | | | |
| 5 | Wander Pharmed | .. | 65% 70% | 100 gm. pack | per pack | 4.61 | 5.62 |
| | | | | 500 gm. pack | per pack | 17.90 | 21.87 |
| 6 | Gurco Pharma | .. | 66% | 100 gm. pack | per pack | 4.20 | 5.00 |
| | | | | 1000 gm. pack | per pack | 39.90 | 47.50 |
| 7 | Gujarat Pharmaceutical | .. | | | | | |
| | *Sodium P.A.S. Tabs.* | | | | | | |
| 1 | Albert David* | .. | 0.5 gm/tab. | 50 tabs. bottle | per bottle | 1.75 | 2.10 |
| | | | | 100 tabs. bottle | per bottle | 3.40 | 4.08 |
| | | | | 500 tabs. bottle | per bottle | 16.00 | 19.20 |
| | | | | 1000 tabs. bottle | per bottle | 31.00 | 37.20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 500 mg | 1000 [illegible] | [illegible] | | |
| 2 Mart n & Harr s | | | 5000 tabs T n | per Tin | 110 00 | 129 40 |
| 3 Gurco Pharma | | 500 mg | 1000 tabs T n | per T n | 30 00 | 37 50 |
| 4 Zandu | A. IISAL | 0 34 gm | 250 tabs T n | per T n | 5 95 | 7 00 |
| | | | 1000 tabs T n | per T n | 22 10 | 26 00 |
| 5 Shetty's Pharmaceut cal | | 0 5 gm | 1000 tabs Tin | per T'n | | 35 00 |
| *Ca l um P A S Tabs* | | | | | | |
| 1 Mart n & Harr s | | 500 mg | 1000 tabs bo tle | per bot le | 27 95 | 32 90 |
| | | | 5000 tabs T n | per T n | 125 00 | 147 06 |
| 2 Zandu | CALAMISAL | 0 5 G | 100 tabs T n | per T'n | 3 57 | 4 20 |
| | | | 250 tabs T n | per T n | 7 22 | 8 50 |
| | | | 1000 tabs T n | per I n | 27 20 | 32 00 |
| *T tan s Ant oxin Inj* | | | | | | |
| 1 B olog al Evans | | 1500 I U /amps | S ngle amp | per amp | 1 75 | 2 10 |
| | | 10 000 I U /v als | S ngle amp | per amp | 10 00 | 12 00 |
| | | 50 000 I U /v als | S ngle amp | per amp | 40 00 | 48 00 |
| 2 Bengal Immunity* | | 750 I U | S ngle amp | per amp | 1 60 | 1 92 |
| | | 1500 I U | Single amp | per amp | 2 40 | 2 88 |
| | | 5000 I U | S ngle amp | per amp | 6 80 | 8 16 |
| | | 10 000 I U | S ngle amp | per amp | 13 20 | 15 84 |
| | | 20 000 I U | Sing e amp | per amp | 24 80 | 29 76 |
| | | 50 000 I U | Single amp | per amp | 61 60 | 73 92 |
| 3 Bengal Chem cal | | 750 I U | S n le amp | per amp | 1 20 | 1 50 |
| | | 1500 I U | S ngle amp | per amp | 2 00 | 2 50 |
| | | 5000 I U | S'ngle amp | per amp | 6 80 | 8 50 |
| | | 10 000 I.U | S ngle amp | per amp | 13 20 | 15 33 |

TABLE 24.4—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 4 | Haffkine | .. | 1500 I.U./vial | Single amp. 1 ml vial | Per amp. per vial | 2.20 | .. |
| | | | | 1 ml × 10 vial | per box | 22.00 | .. |
| | | | | 2 ml vial | per vial | 2.00 | .. |
| | | | | 2 ml × 10 vial | per box | 20.00 | .. |
| | | | 10,000 I.U. | 4 ml vial | per box | 3.00 | .. |
| | | | | 10 ml vial | per box | 10.00 | .. |
| | | | 20,000 I.U. | 10 ml × 100 vial | per box | 108.00 | .. |
| | | | | 5 ml vial | per box | 24.00 | .. |
| | *Preduisolone Tabs* | | | | | | |
| 1 | Pfizer | DELTACORTRIL | 5 mg. | 10 tabs pack | per pack | 2.66 | 2.97 |
| | | | | 100 tabs pack | per pack | 23.63 | 26.41 |
| 2 | Merck sharp | CODELCORTONE | 5 mg. | 10 tabs pack | per pack | 2.41 | 2.87 |
| | | | | 30 tabs pack | per pack | 7.06 | 8.71 |
| | | | | 100 tabs pack | per pack | 21.35 | 26.34 |
| | | | | 1000 tabs pack | per pack | 192.65 | 237.65 |
| 3 | Alembic Chemical | PRECIN | 5 mg. | 10 tabs pack | per pack | 2.18 | 2.72 |
| | | | | box 10 × 10 tabs. | per box | 21.80 | 27.25 |
| | | | | 500 tabs | per box | 95.00 | 118.75 |
| 4 | Boots | DELTASTAB | 0.5 gm. | 10 per pack | per pack | 1.93 | 2.38 |
| | | | | 100 per pack | per pack | 18.90 | 22.30 |
| 5 | CIPLA | .. | 5 mg. | 20 per pack | per pack | 4.00 | 4.20 |
| | | | | 100 per pack | per pack | 18.10 | 21.90 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | Wyeth Labs | WYSOLONE | 5 mg | 10 x 10 tabs | per pack | 21 41 | 26 41 |
| | | | | 500 x 10 tabs | per pack | 60 00 | 70 00 |
| 7 | Hoechst | HOSTACORTIN H | 5 mg | 10 x 10 tabs strip | per strip | 20 00 | 24 00 |
| | | | | 100 x 10 tabs strip | per strip | 181 20 | 218 16 |
| 8 | Dey's Medical | | 5 mg | 100 per strip | per strip | 18 50 | 22 20 |
| 9 | OPIL | | 5 mg | 10 per bottle | per bottle | 2 50 | 2 90 |
| | | | | 100 per bottle | per bottle | 16 00 | 18 40 |
| | | | | 500 per bottle | per bottle | 77 50 | 89 15 |
| 10 | Therapeutic Pharmaceuticals | PRENILON | 5 mg | 10 per pack | per pack | 2 42 | 2 85 |
| | | | | 100 per pack | per pack | 16 57 | 19 50 |
| | | | | 1000 per pack | per pack | 157 25 | 185 00 |
| 11 | Gurco Pharma | | 5 mg | 100 tabs pack | per pack | 15 00 | 18 75 |
| | | | | 1000 tabs pack | per pack | 125 00 | 156 25 |
| 12 | Zandu | | 5 mg | 10 tabs pack | per pack | 1 36 | 1 60 |
| | | | | 20 tabs pack | per pack | 2 63 | 3 10 |
| | | | | 100 tabs pack | per pack | 12 75 | 15 00 |
| | | | | 1000 tabs pack | per pack | on application | |
| 13 | Ranbaxy Labs | RANBISOLONE | 5 mg | 100 tabs pack | per pack | 20 00 | 26 00 |
| | | | | 250 tabs pack | per pack | 47 50 | 59 40 |
| 14 | Khandelwal Labs | ASMAPLON | | 25 tabs pack | per pack | 15 00 | 17 25 |
| | | | | 500 tabs pack | per pack | 59 00 | 67 85 |
| | | | | 1000 tabs pack | per pack | 114 00 | 131 10 |
| 15 | Shetty's Pharmaceutical | | 5 mg | 100 tabs pack | per pack | 13 00 | 15 25 |
| | | | | 500 tabs pack | per pack | 60 00 | 74 75 |
| 16 | Gujarat Pharmaceutical | | 5 mg | 10 x 10 tabs tube | per tube | 15 00 | 18 70 |
| | | | | 100 tabs pack | per pack | 13 50 | 17 05 |
| | | | | 10 x 10 tabs strip | per strip | 15 00 | 18 70 |
| | | | | 500 tabs pack | per pack | 65 00 | 86 25 |

TABLE 24.5

*Selling prices for multiple drugs formulations*

| Sl. No. | Name of the formulation | Brand Name | Drugs contained and dosage | Pack | Unit for pricing | Prices | |
|---|---|---|---|---|---|---|---|
| | | | | | | Wholesale price (Rs.) | Retail price (Rs.) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | | | *Combination of different forms of Penicillin* | | | | |
| 1 | Pfizer . . | PPF-4 | Procaine Penicillin G.3 lac units<br>Pot. Penicillin G. 1 lac units | 25 vials Pack | per pack | 14.76 | 15.56 |
| | | PPF-20 | Procaine Penicillin G 15 lac units<br>Pot. Penicillin G. 5 lac units | 5 vials Pack | per pack | 10.30 | 10.55 |
| 2 | Sarabhai Chemicals | CRYS-4 | Cryst. Sod. Penicillin G. 4 lac units<br>Procaine Penicillin 2 lac units | 10 vials Pack | per pack | 5.62 | 6.23 |
| | | CRYS-8 | Cryst. Sodium Penicillin G. 8 lac units<br>Procaine Penicillin 6 lac units | 10 vials Pack | per pack | 8.58 | 9.50 |
| | | CRYS-12 | Cryst. Sod. Penicillin G 12 lac units<br>Procaine Penicillin 9 lac units | 10 vials Pack | per pack | 12.05 | 13.40 |
| | | | *Combination of different forms of streptomycin* | | | | |
| 1 | Sarabhai Chemicals . | AMBISTRYN | Crystallin Di-hydrostreptomycin Sulphate 0.5 gm.<br>Streptomycin sulphate 0.5 gm | 10 vials Pack | per pack | 5.92 | 6.56 |
| 2 | Merck Sharp . . | DUOSTREP | Streptomycin Sulphate 0.5 gm<br>Dihydrostreptomycin sulphate 0.5 gm | 10 vials Box | per box | 5.80 | 6.44 |
| | | | *Injections of Penicillin and Streptomycin* | | | | |
| 1 | Hindustan Antibiotics | STREPTOPENICILLIN | Procaine Penicillin G-3 lac units<br>Sodium penicillin 1 lac units<br>Streptomycin Sulphate 1 gm | ½ gm dose | per vial | 0.77 | 0.81 |
| | | | Procaine Penicillin G-3 lac units<br>Sodium penicillin 1 lac units<br>Streptomycin Sulphate 1 gm | 1 gm dose | per vial | 1.02 | 1.08 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 Pfizer . . . | COMBIOTIC | Procaine Penicillin G-3 lac units<br>Sodium Penicillin G-1 lac units<br>Streptomycin Sulphate 0 5 gm. | 0 5g x 25 vials | Per vial | 20 21 | 21 25 |
| | | | 5 dose x 5 vials | 5 dose x 5 vials pack | 17 60 | 18 50 |
| | COMBIOTIC-FORTE | Procaine Penicillin G 3 lac units<br>Sodium Penicillin G 1 lac units<br>Streptomycin Sulphate 1 gm | 5 vilas | 5 vials | 5 37 | 5 65 |
| 3 Pfizer . | DEPEMYCIN | (1) Pot Penicillin G 5 lac units and<br>(2) Streptomy in Sulphate equivalent to 0 5 G base | 25 vials pack | Per pack | 22 28 | 23 48 |
| 4 Merck Sharp . | PENSTREP 4 ½ | (1) Penicillin Procaine 3 lac units<br>(2) Sodium Penicillin 1 lac units and<br>(3) Streptomycine Sulphate 1 grm. | 10 vials pack | Per pack | 7 00 | 7 78 |
| | PENSTREP 4 1 | (1) Penicillin Procaine 3 lac units<br>(2) Sodium Penicillin 1 lac units and<br>(3) Streptomycin Sulphate 1 grm | 10 vials pack | Per pack | 8 50 | 9 44 |
| 5 Sarabhai Chemicals | PENMYN | (1) Sodium Penicill n 5 lac units and<br>(2) Streptomycin 0 25 grms | 10 vials box | Per box | 7 25 | 8 10 |
| | | | 10 vials box | Per box | 8 47 | 9 39 |
| | PENMYN FORTIS | (1) Sodium P-G 5 lac units and<br>(2) Streptomycin 5 gms | 10 vials box | Per box | 11 74 | 13 02 |
| | DICRYSTICIN 5 800 | (1) Procaine P-G 3 lac units<br>(2) Sodium P 2 lac units and<br>(3) Streptomycin 0 50 gm (1 dose) | | | | |
| | DICRYSTICIN-S | (1) Procaine Penicillin G 3 lac units and<br>(2) Streptomycin 0 5 gm<br>(3) Sodium Penicillin 1 lack unit | 1 does Box of 10 vials | Per box | 7 65 | 8 50 |
| | DICRYSTICIN-S FORTIS | (1) Procaine Penicillin G 3 lac units<br>(2) Sodium Penicillin 1 lac units and<br>(3) Streptomycin 1 gm (1 dose) | 10 vials box | Per box | 10 21 | 11 30 |
| | | | 50 vials box | Per box | 44 75 | 47 20 |

TABLE 24.5—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 5 | Sarabhai Chemicals —*Contd.* | DICRYSTICIN-S PEDIATRIC | (1) Procaine Penicillin 3 lac units (2) Sodium Penicillin 1 lac units and (3) Streptomycin 0.25 gm | 10 vials box | per box | 6.84 | 7.58 |
| 6 | Hoechst . . . | OMNAMYCIN 4:05 | (1) Penicillin and (2) Streptomycin | 5 vials box | per vial | 1.70 | 1.89 |
| | | | | 100 vials box | per box | 161.50 | 179.27 |
| 7 | Day's Medical . . | PRO-K-MYCIN | (1) Procaine Penicillin and (2) Streptomycin sulphate | 4 lac units 0.5 gm | per vial | 0.77 | 0.85 |
| | | | IV. *Caps of Chloramphenicol and Tetracyclines* | | | | |
| 1 | Gurco Pharma . . | TETRACHLOR | (1) Tetracycline Hydrochloride 100 mg (2) Chloramphenicol 150 mg | 12 caps pack | per pack | 8.53 | 10.00 |
| | | | | 100 caps pack | per pack | 53.33 | 62.50 |
| 2 | Mac Labs. . . | KEMICYCLINE | (1) Chloramphenicol 0.2 gm and (2) Tetracycline Hcl 0.1 gm | 8 caps pack | per pack | 6.37 | 7.50 |
| | | | | 100 caps pack | per pack | 63.75 | 75.00 |
| | | | V. *Tabs. of Di-iodo-hydroxy-quinoline and Chloroquin Phosphate* | | | | |
| 1 | Bengal Immunity* . | | (1) Di-iodo-hydroxyquinoline 0.25 G and (2) Chloroquin 0.75 G | 100 Tabs. box | per box | 10.00 | 12.00 |
| | | | | 500 Tabs. box | per box | 42.50 | 51.00 |
| | | | | 100 Tabs. box | per box | 80.00 | 96.00 |
| 2 | Martin & Harris . | DIQUINATE | (1) Chloroquin and (2) Di-iodo-hydroxyquinoline | 100 Tabs. box | per box | 8.50 | 10.00 |
| | | | | 500 Tabs. box | per box | 34.13 | 40.15 |
| 3 | May & Baker . | NIVEMBIN | (1) Chloroquin and (2) Di-iodo-hydroxyquinoline | 100 Tabs. box | per box | 10.68 | 12.68 |
| | | | | 500 Tabs. box | per box | 53.38 | 63.38 |
| | | | VI. *Caps of Chloramphenicol and Streptomycin Sulphate* | | | | |
| 1 | Mac Labs. . . | STREPTOKE-MICETINE | Chloramphenicol 0.125 G and Di-hydrostreptomycin 0.100 G | 12 caps pack | per pack | 5.10 | 6.00 |
| | | | | 100 caps pack | per pack | 38.25 | 45.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | Standard Pharmaceuticals | TYPOSTREP | Chloramphenicol 125 mg<br>Streptomycin 125 mg | 12 caps<br>120 caps | per pack | 5 20<br>44 00 | 6 20 |
| 3 | Boehringer-Knoll | CHLORAMPHYCIN—S | Chloramphenicol and 125 mg<br>Streptomycin sulphate 125 mg | 12 caps pack<br>100 caps pack | per pack<br>per pack | 5 33<br>40 51 | 6 23<br>47 21 |
| 4 | Parke-Davis | CHLORSTREP | Chloramphenicol 125 mg and<br>Di hydrostreptomycin 125 mg | 12 caps pack | per pack | 6 05 | 7 92 |
| | | CHLORSTREP SUSPENSION | Chloramphenicol 125 mg<br>Di hydrostreptomycin | 32 ml pack<br>60 ml pack | per pack<br>par pack | 6 45<br>11 29 | 8 45<br>14 79 |
| 5 | Gurco Pharma | GURCOMYCETIN | Chloramphenicol 125 mg and<br>Di hydrostreptomysin 125 mg | 12 caps pack<br>100 caps pack<br>500 caps pack<br>1000 caps pack | per pack<br>per pack<br>per pack<br>per pack | 4 27<br>29 87<br>138 66<br>266 60 | 5 00<br>35 00<br>162 50<br>312 60 |
| | | GURCOMYCETIN STREP SUSPENSION | Chloramphenicol 125 mg and<br>Di hydrostreptomycin 125 mg | 50 grms pack<br>300 grams pack | per pack<br>per pack | 4 27<br>32 00 | 5 00<br>37 00 |
| | | | **VII** *Injection of Tetracyline and Vitamin C* | | | | |
| 1 | Standard Pharmaceuticals | CETRAMYCETIN | Tetracycline 125 mg<br>Chloramphenicol 125 mg and<br>Vitamin C 250 mg | 4 caps<br>100 caps | per pack<br>per pack | 16 60<br>76 00 | 20 00 |
| 2 | Cyanamid | ACHROMYCIN INTRAVENOUS | | 250 mg vial<br>500 mg vial | per vial<br>per vial | 5 70<br>9 23 | 7.13<br>11 54 |
| | | | **VIII** *Ointment of Prednisolone and Chloramphenicol* | | | | |
| | Alembic Chemical | PREDCIN FORTIFIED OPHTHALMIC<br>FORTIFIED TOPICAL | Predn solone & Chloramphenicol<br>Prednisolone & Chloramphenicol | 3 5 grams pack<br>5 grams pack | per pack<br>per pack | 3 45<br>5 20 | 4 31<br>6 50 |

[*Exclusive of excise duty ]

**Table 24.5—Concld.**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| | | | **IX. *Tabs. Granules of I.N.H. & P.A.S.*** | | | | |
| 1 | Biological Evans | BAPANEX— Granules | P.A.S. 78% and I.N.H. 2.5% | 100 grams pack | per pack | 6.15 | 7.35 |
| | | | | 250 grams pack | per pack | 14.35 | 17.15 |
| 2 | Smith Stanistreet | DIPASON | P.A.S. & I.N.H. | 500 Tabs. pack | per pack | 28.00 | 34.85 |
| | | | | 1000 Tabs pack | per pack | 56.00 | 75.90 |
| 3 | Cadila Labs. | ISOCADIPAS | P.A.S. & I.N.H. | 30's packets | per packet | 19.00 | 21.85 |
| | | ISOCADIPAS Graunules | P.A.S. & I.N.H. | 500 tabs. pack | per pack | 32.00 | 36.80 |
| | | ISOPAR | P.A.S. & I.N.H. 100 mg. | 1000 tabs. pack | per pack | 61.80 | 71.05 |
| | | | | 4000 tabs. pack | per pack | 220.00 | 253.00 |
| 4 | Zandu | ISOCALAMISAL | Calcium P.A.S. 0.5G and I.N.H. 15 mg. | 250 tabs. pack | per pack | 8.92 | 10.50 |
| | | | | 1000 tabs. pack | per pack | 33.66 | 39.60 |
| 5 | Gujarat Pharmaceuticals | I.C.P. | P.A.S. & I.N.H. | 1000 Tabs pack | per pack | 27.00 | 28.35 |
| | | | | 5000 Tabs pack | per pack | 130.00 | 136.50 |
| 6 | Neo Pharma | INAPAS | P.A.S. & I.N.H. | 100 Tabs pack | per pack | 6.60 | 7.75 |
| | | | | 1000 Tabs pack | per pack | 59.50 | 70.00 |
| | | | **X. *Tabs. of Iodo-chlor-hydroxy-quinoline, Tetracycline and Chloroquin Phosphate*** | | | | |
| 1 | OPIL | TEQUINOPIL | (1) Tetracycline Hydrochloride (2) Iodo-chlor-hydroxy-quinoline (3) Chloroquin Phosphate | 30 Tabs pack | per pack | 7.50 | 8.84 |
| | | | | 250 Tabs pack | per pack | 55.00 | 64.83 |
| 2 | Lahs. Grimault | AMICLINE | (1) Tetracycline HCL 25 mg (2) Di-iodo 250 mg and (3) Chloroquin Phosphate 80 mg | 40 Tabs pack | per pack | 10.20 | 12.00 |
| | | | | Strip of 8 tabs | per strip | .. | 2.40 |

# Table 24 6

*Foreign domestic prices of the formulations of the peeifed drugs (Form lations with an asterisk were selected for ost investigation)*

| Sl No | Formulat on/Country | Descr pt on of formulat on | Pack ng | Strength | Un t or pr cing | Pr ce in Fo e gn Currency: Trade/whole sale | Pr ce in Fo e gn Currency: Cons mer s retail | Pr ce in Indian Cu rency (Rs ): Trade/whole sale | Pr ce in Indian Cu rency (Rs ): Consu mer's reta l |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | *Vitam n A Inj* | | | | | | | | |
| 1 | U K (The Crookes Labs Ltd ) | | Boxes of 6 × 1 ml ampoules | 100 000 I U per ampoule | per box of 6 × 1 amps | 8 sh | 12 sh | 7 20 | 10 80 |
| 2 | Czechoslovakia | Inj le em | 5 injs | 50 000 U | 5 Injs | | 16 80 Kes<br>1 Re 1 92 kes | | 8 75 |
| 3 | Hungary | | 5 × 1 ml | 100 000 E | per pack | | 32 00 For nts | | 10 29 |
| | | | 50 × 1 ml | 100 000 E p r ml | per pack | | 259 40 For nts | | 83 40 |
| | | | 20 × 1 ml | 50 000 E | per pack | | 29 20 Forints | | 9 39 |
| 2 | *Vitam n A Tabs* | | | | | | | | |
| 1 | U K (a) Roche Products | Ro A VIT' | 30 tabs | 50 000 IU per tab | per pack | 7 sh | | 6 30 | |
| | | | 200 tabs | per tab | p r pack | 40 sh | | 36 00 | |

TABLE 24.6—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Hungary . . | (1) Vit-A | 50 × 5000E | | per pack | .. | 9.40 Forints | .. | 3.02 |
| | | (2) Vit-A+D2 | 50 × 5000 E | | per pack | .. | 10.20 Forints | .. | 3.28 |
| 3 | *Cyanocobalamin, Inj.*. | | | | | | | | |
| | (1) U.K. (Glaxo Products) | "CYTAMEN" | 6 × 1 ml. | 100 Mg/ml. | per pack | | *2/6sh. 3/4 sh. | 2.25 | 3.00 |
| | | | 6 × 1 ml. | 250 Mg/ml. | per pack | | *2/9sh. 3/8 sh. | 2.48 | 3.30 |
| | | | 6 × 1 ml. | 1000 Mg/ml. | per pack | | *5/9sh. 7/8 sh. | 5.18 | 6.90 |
| | (2) Czechoslovakia | Cyanocobalamin | 5 ml. vial. | 1000 mg/per ml. | per pack | .. | 60 kes | .. | 31.25 |
| | (3) Hungary . . | Vit B12 | 3 × 1 ml. | 200 gamma | per pack | .. | 5.60 Forints | .. | 1.80 |
| | | | 3 × 1 ml. | 300 gamma | per pack | .. | 32.80 Forints | .. | 10.55 |
| | | | 3 × 1 ml. | 1000 gamma | per pack | .. | 102.30 Forints | .. | 32.89 |
| 4 | *Hydroxocobalamin* Inj. | | | | | | | | |
| | (1) U.K. (Glaxo Products) | "NEO-CYTAMEN" | 6 × 1 ml. | 250 Mg/per ml. | per pack | .. | *2/9sh. 3/8sh. | 2.48 | 3.30 |
| | | | 6 × 1 ml. | 1000 Mg/per ml. | per pack | .. | *15/9sh. 7/8sh. | 5.18 | 6.90 |
| 5 | *Ascorbic Acid Tabs* | | | | | | | | |
| | (1) U.K. (Roche Products) | "REDOXON" | 100 tabs | 50 mg. | per pack | 3/- sh. | .. | 2.70 | .. |
| | | | 1000 tabs | 50 mg. | per pack | 16/- sh. | .. | 14.40 | .. |
| | | | 100 tabs | 500 mg. | per pack | 15/8 sh. | .. | 14.10 | .. |
| | | | 500 tabs | 500 mg. | per pack | 67/- sh. | .. | 60.30 | .. |
| | (2) Czechoslovakia | | 20 pc | 100 mg. | per pack | Kes. 1.92 | Kes. 3.20 | 1.00 | 1.67 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6 *Ascorbic Acid Inj* | | | | | | | | |
| (1) U K. (Roche Product) | 'REDOXON' | 6 Injs | 100 mg/ 2 ml | per pack | 5/ sh | | 2 70 | |
| (2) Hungary | | 50 Injs | 100 m./ 2 ml | per pack | 20/ sh | | 18 00 | |
| | | 5 × 1 ml | 100 m./ml | per pack | | 8 75 For nts | | 2 81 |
| | | 100 × 1 ml | 100 m./ml | per pack | | 175 00 For nts | | 56 26 |
| 7 *Sulphadiaz ne Tabs* | | | | | | | | |
| (1) U K. (Roche Products) | | 100 tabs | 0 5 g | per pack | 7/9½ d | 13/9 | 7 01 | 12 38 |
| (May & Baker) | | 500 tabs | 0 5 g | per pack | 34/ d | 60/ d | 30 60 | 54 00 |
| (2) Sw tzerland | Sulfathyzol | 20 tabs | | per pack | | 2 90 | | 5 02 |
| (3) Hungary | Sulfathyzol | 250 tabs | 500 mg | per pack | | 122 00 Forints | | 39 22 |
| 8 *Sodium pen cill n G Inj* | | | | | | | | |
| (1) U K (Glaxo Products) | CRYSTAPEN Inj | 10 vials | 2 lac un ts 1 0 mg | per pack | *5/ s | 7/6 | 4 50 | 6 75 |
| | (Sod um Penicill n G ) | 10 v als | 5 lac un ts 300 mg | per pack | *6/ s | 9/ | 5 40 | 8 10 |
| | | 10 v las | 1 lac un ts (0 6 gram) | per pack | *9/ s | 13/6 | 8 10 | 12 15 |
| (2) Czechoslovak a | Kal um Penicillin | | 5 lac un ts | per v al | | Kcs4 | | 2 08 |
| | | | 10 lac un ts | per vial | | Kcs8 | | 4 17 |
| (3) Hungary | Pen c llin G Inject on | 1 × 100 000E | | | | 6 80 For nts | | 2 19 |
| | | 1 × 200 000E | | | | 8 80 Forints | | 2 83 |
| | | 1 × 1000 000E | | | | 40 — For nts | | 12 86 |
| | Retard ll n | 1 × 400 000E | | | | 12 — Forints | | 3 86 |
| | | 1 × 1000 000E | | | | 25 80 For nts | | 8 29 |
| | Prompte ll n Inject on | 1 × 400 000E | | | | 12 20 Forints | | 3 92 |
| | | 1 × 800 00E | | | | 23 70 Forints | | 7 62 |

TABLE 24.6—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 9 | *Procaine Penicillin G. Inj.* | | | | | | | | |
| | (1) U.K. (Glaxo Products) | 'SECLOMYCIN' | 10 vials | Procaine Penicillin G-3 lac units Sod. Penicillin G.1 lac units Streptomycin 0.5 gm. | per pack | *10/- sh. | 15/sh. | 9.00 | 13.50 |
| 10 | *Penicillin Tabs* | | | | | | | | |
| | (1) U.K. | CRYSTAPEN-V-TABS | 100 | 125 mg. | per pack | *14/-sh | 21/-sh | 12.60 | 18.90 |
| | (Glaxo Products) | (Potassium penicillin-V.) | 100 | 250 ng. | per pack | *27/-sh | 40/-sh | 24.30 | 36.45 |
| | (2) Czechoslovakia | Penicillin-V-Tablets | 24 tablets | 2 lac units | per pack | | Kcs. 26. | .. | 13.54 |
| | (3) Hungary . . | Beacillin tabletta | 12 × 200.000E | | per pack | .. | 30.90 Forints | .. | 9.93 |
| | | | 250 × 200.000E | | per pack | .. | 643.70 Forints | .. | 206.95 |
| | | Vegacillin Tabletta | 12 × 200.000E | | per pack | .. | 30.90 Forints | .. | 9.93 |
| | | | 250 × 200.000E | | per pack | .. | 643.70 Forints | .. | 206.95 |
| 11 | *Streptomycin Sulphate Inj.* | | | | | | | | |
| | (1) U. K. (Glaxo Product) | "STREPOLIN" Streptomycin Sulphate 33 per cent | 10 vials 1×1 gm. | 1 gram (3 ml.) | per 10 vials | .. | 14/23 sh. | 8.55 | 12.83 |
| | (2) Hungary . . . | Streptomycin Injection | 1 × 1 gm. | | | per pack | 30.20 Forints | .. | 9.71 |
| | | Streptoplex | | 1 × 1 gm. | | per pack | 30.20 Forints | .. | 9.71 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 12 D Hydrostreptomycin Sulphate—Inj | | | | | | | | |
| (1) Hungary | D hydroxtrep tomyc n Inj | 1 × 1 gm | | Per pack | | 30 20 Forints | | 9 71 |
| 13 Chloramphen col Caps | | | | | | | | |
| (1) U K (Parke Davis & Co.) | CHLORONYCE TIN (Chloramphen col) | 20 s | 250 mg | Per pack | 9 h.4d | 14 h 0d | 8 40 | 12 60 |
| | | 100 s | 250 mg | Per pack | 71 h.2d | 111sh.3d | 66 73 | 100 13 |
| | caps | 500 s | 250 mg | Per pack | 353 h.10d | 538sh.3d | 322 93 | 484 49 |
| | | 1000 s | 250 mg | Per pack | 715sh 0d | 1072sh 6d | 643 50 | 965 25 |
| (2) Czechoslovakia | Pack ng in caps 20 pc | | | Per pack | | Kes 40 | | 20 83 |
| (3) Switzerland | Chloramphencol | 12 caps | | Per pack | | 5 10 | | 8 33 |
| | Mediamycetin | 100 caps | | Per pack | | 27 90 | | 48 32 |
| 4 Chloramphenicol Inj | | | | | | | | |
| (1) Hungary | Chlorocid | 1 × 1 gm. | | Per pack | | 16 Forints | | 5 14 |
| | In ection | 50 × 1 gm. | | Per pack | | 680 Forints | | 218 62 |
| 5 Tetracycl n ps | | | | | | | | |
| (1) U K. (a) (MB, CO Labs) | Chlortetracycline Caps | 100 s | 250 mg | Per bottle of 100 | 59/6d | 93/6d | 53 55 | 84 15 |
| (b) Pfizer | TETRACYN Tetracycl ne Caps | Bottle of 16 | 250 mg | Per pack | 10/10d | 16sh. 3d | 9 75 | 14 63 |
| | | | | | £ s d | £ s d | | |
| | | 100 | 250 mg | Per pack | 9 5 2 | 4 17 9 | | |
| | | 100 | 250 mg | Per pack | 31 9 0 | | 58 65 | 87 98 |
| | | 1000 | 250 mg | Per pack | | 47 3 6 | 566 10 | 849 15 |
| (2) Czechoslovakia | Tetracycl ne | 20 pc | 250 mg | Per pack | | Kes 50 | | 26 04 |
| (3) Switzerland | (a) MEDIACYCLIN | 16 Caps | | | | 17 40 | | 30 14 |
| | (b) TETRACYN | 16 Caps | | | | 22 30 | | 38 62 |

## Table 24.6—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 16 | *Oxytetracyline Caps* | | | | | | | | |
| | (1) U.K. (Pfizer) | TERRAMYCIN Oxytetracyclin Caps. | Bottle of 16 | 250 mg. | Per Bottle | S d 13 11 | S d 1-0-10 | 12.53 | 18.76 |
| | | | 100 | 250 mg. | Per Bottle | £ s d 4 3 10 | £ s d 6 5 9 | 75.46 | 113.18 |
| | | | 1000 | 250 mg. | Per Bottle | 40 9 5 | 60 11 1½ | 728.18 | 1092.71 |
| | (2) Czechoslovakia | Oxytetracline Hydrochloride 50 pc. | | | | .. | Kcs. 50. | .. | 26.04 |
| | (3) Switzerland | TERRAMYCIN | 16 caps. | | | .. | 22.30 | .. | 38.62 |
| | (4) Hungary . . | Tetran B-2/270 mg Oxytetacyclin Tartalem | 16 × 900 mg | | | .. | 70.40 Forints | .. | 22.63 |
| 17 | *Chlortetracycline Caps* | | | | | | | | |
| | (1) U.K. (MESCO-LAPS) | Chlortetra-cyclin hydroch-loride | 100's | 250 mg. | Per Bottle | 59sh. 6d. | 93sh. 6d. | 53.55 | 84.15 |
| | (2) Czechoslovakia | Chlortetracyclin hydrochloride 20 pc | | 250 mg. | | .. | Kcs. 25. | .. | 13.02 |
| | (3) Hungary . . | Chlortetracline Hydrochloride Tabletta | 16 × 250 mg | | | .. | 318.20 Forints | .. | 102.30 |
| 18 | *Tetracyclne Injs.* | | | | | | | | |
| | (1) U.K. (Pfizer) . . | TERRACYN (a) Intramuscular | 100 mg. vial | 100 mg. | Per vial | Sh. d. 2 0 | Sh. d. 3 0 | 1.80 | 2.70 |
| | | | 250 mg. vial | 250 mg. | | 3 8 | 5 6 | 1.30 | 1.95 |
| | | (b) Intravenaus | | 500 mg. | Per vial | 0 6 | 9 9 | 5.85 | 8.78 |
| | (2) Hungary . . | Tetracycline hydrochloride Inj. | 16 × 250 mg. | | | .. | 238.70 Forints | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 19 *Oxytetracycl n Inj* | | | | | | | | |
| (1) U K. (Pfizer) | TERRAMYCIN (a) In ramu cular | 100 mg v al | 100 mg | Per vial | Sh. d 2 6 | Sh d 3 9 | 2 25 | 3 38 |
| | | 250 mg | 250 mg | Per v al | 4 8 | 7 0 | 4 20* | 6 30 |
| | (b) Intravenaus | 500 mg v al | 500 | Per v al | 8 5 | 12 7½ | 7 50 | 11 36 |
| 20 *Chloroqu ne Pho pha e Tabs* | | | | | | | | |
| (1) U K. (Imper al Chem cal Indu tr es Ltd ) | AROCHLOR Chlo oquine | 100 s | 0 25 gramme | Per v al | 10sh 3d | 18 Sh 1½d | 9 23 | 16 31 |
| | Pho phate Tabs B P 0 25 grm | 500 s | 0 25 gramme | Per v al | 42sh 2d | 74sh 6d | 37 95 | 67 05 |
| (2) Czechoslovak a | Chloroqu ne | | | | | Kes 10 80 | | 5 62 |
| | Pho phate Tabs | 30 tabs | 0 25 g | | | 21 80 | | 37 76 |
| (3) Sw tserland | Resochine Tabs | 100 tabs | | | | 29 10 Forints | | 9 36 |
| (4) Hungary | (a) D laz l table ta | 30×250 mg | | | | 272 40 For nts | | 87 38 |
| | | 300×250 mg | | | | 19 80 For nts | | 6 37 |
| | (b) Delag l In ject on | 5 ×5ml | 250 mg /ml | | | 173 30 For ints | | 55 72 |
| | | 50 ×5ml | 250 mg /ml | | | | | |
| 21 *Iodo-Chloro Hydroxy-qu nol ne Tabs* | | | | | | | | |
| (1) Hungary | Enteroseptol | 250 mg | | | | 16 50 For nts | | 5 30 |
| | Tabletta | 250 mg | | | | 151 60 For-nts | | 48 74 |
| 22 *D Iodohydroxyqu no-l ne Tabs* | | | | | | | | |
| (1) U K (May & Baker) | EMBAQUIN Tabs B P | 20×300 mg | 300 mg | | 1 Sh 6½d | 2 Sh. 9d | 1 39 | 2 48 |

TABLE 24.6—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 23 | *Chlorpropamide Tabs* | | | | | | | | |
| | (1) U. K. ( Pfizer) | "DIABINESE" | Botte of | | | £. Sh. d. | £. Sh. d. | | |
| | | | 100 | 100 mg. | per bottle | 0 18 0 | 1 7 0 | 16.20 | 24.03 |
| | | | 500 | 100 mg. | per bottle | 3 18 2 | 5 17 3 | 70.35 | 105.53 |
| | | | 100 | 250 mg. | per bottle | 1 19 5 | 2 19 1½ | 35.48 | 53.21 |
| | | | 500 | 250 mg. | | 9 5 7 | 13 18 4½ | 167.03 | 250.54 |
| | (2) Hungary | Osadian Tabletta | 20×200 mg. | | | .. | 16.50 Forints | .. | 5.30 |
| | | Diabenese Tabletta | 200×200 mg. | | | .. | 145.80 Forints | .. | 46.87 |
| | | | 100×250 mg. | | | .. | 223.10 Forints | .. | 71.73 |
| 24 | *Amodiaquine Hydrochloride Tabs.* | | | | | | | | |
| | (1) U.K. (Parke Davis) | "COMOQUIN" | 3's | 200 mg. | Per pack | 1 Sh. 2d. | 1 Sh. 9d. | 1.05 | 1.58 |
| | | | 100's | 200 gm. | Per pack | 20 Sh. 8d. | 31 Sh. | 18.60 | 27.90 |
| | | | 1000's | 200 mg. | Per pack | 200 Sh. | 300 Sh. | 180.00 | 270.00 |
| | (2) Hungary | Comoquine Tabletta | 50× | 200 mg. | Per pack | .. | 273.60 Forints | .. | 87.96 |
| 25 | *Tolbutamide Tabs* | | | | | | | | |
| | (1) U.K. (Riker Labs) | 'ARTOSIN' brand | 100's | .. | .. | .. | 19 Sh. | .. | 17.10 |
| | | | 500's | .. | .. | .. | 89 Sh. | .. | 80.10 |
| | (2) Hungary | Rastinon Injection per cent | 1×20 ml. | .. | .. | .. | 25.40 Forints | .. | 8.17 |
| | | | 5.5×20 ml. | .. | .. | .. | 114.50 Forints | .. | 36.81 |
| 26 | *Insulin Injs.* | | | | | | | | |
| | (1) U. K. (Burroughs Wellcome & Co.) | Insulin Inj. | Dozen | 40 units/ml. | .. | 37 Sh. 4 d. | 58 Sh. 6d. | [illegible] | [illegible] |
| | | | Dozen | 80 units/ml. | | 27 Sh. 1d. | [illegible] | [illegible] | [illegible] |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (2) Czechoslovakia | Insulin Inj vials | | 40 Units/ml | | | Kes 10 | | 5 21 |
| | (3) Switzerland | Insul n 10cc 400 E ea | | | | | 5. | | 8 66 |
| | (4) Hungary | Insulin Inj | 6×10ml | 40 E | | | 128 Forints | | 41 22 |
| | | | 1×5ml | 200 E | | | 17 50 Forints | | 5 63 |
| | | | 1×10ml | 400 E | | | 31 10 Forints | | 10 00 |
| 27 | *Insulin Zinc Suspension Inj Lente* | | | | | | | | |
| | (1) U K | Insulin Zinc | Dozen | 40 units/ml | | Sh 47 | Sh 70 | 42 30 | 63 00 |
| | (Burroughs Well come & Co ) | Suspension Inj lente | Dozen | 80 units/ml | | Sh 89 | Sh 132 | 80 10 | 118 80 |
| | (2) Czechoslovakia | Suspension Inj lente | Dozen | 40 units/ml | | . | *Kes 10* | | 5 21 |
| | (3) Hungary | Insul n Novo/ lente/400 E | 1×10 ml | | | | *51 30 Forints* | | 16 49 |
| 28 | *Insulin Zinc Suspension (Amorphous) Inj (Semi Lente)* | | | | | | | | |
| | (1) U K | Insul n Zinc | Dozen | 40 units *per ml* | per dozen | Sh 47 | Sh 70 | 42 30 | 63 00 |
| | (Burroughs Well *come & Co* ) | Suspension (Amorphous) Inj | Dozen | 80 units per ml | | Sh 89 | Sh 132 | 80 10 | 118 80 |
| | (2) Czechoslovakia | Suspension (Amorphous) Inj | 40 units *per ml* | | | | Kes 10 | | 5 21 |
| | (3) Hungary | Insulin Semi lente/400 E | 1×10 ml | | | | 51 30 Forints | | 16 49 |
| 29 | *Insulin Zinc Suspension (Crystalline)* | | | | | | | | |
| | Inj (Ultralente) | | | | | | | | |
| | (1) U K | Insulin Zinc | Dozen | 40 units/ml | per dozen | Sh 47 | Sh 70 | 42 30 | 63 00 |
| | *(Burroughs Well* come & Co ) | Suspension | Dozen | 80 units/ml | per dozen | Sh 89 | Sh 132 | 80 10 | 118 80 |

TABLE 24.6—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 29 | *Insulin Zinc Suspension (Crystalline)*—Contd. | | | | | | | | |
| | (2) Czechoslovakia | Insulin Zinc Suspension (Crystalline) Inj. (Ultra lente) | | | | .. | Kcs. 10 | .. | 5.21 |
| 30 | *Isophane Insulin Inj.* | | | | | | | | |
| | (1) U.K. . . | | Dozen | 40 units/ml. | per dozen | Sh. 17 | Sh. 70 | 12.30 | 63.00 |
| | (Burroughs Wellcome & Co.) | Isophane Insulin Inj. | Dozen | 80 units/ml. | per dozen | Sh. 89 | Sh. 132 | 80.10 | 118.80 |
| 31 | *Protamine Zinc Insulin Inj.* | | | | | | | | |
| | (1) U. K. . (Burroughs Wellcome & Co.) | Protamine Zinc Insulin Inj. | Dozen | 40 units/ml. | per dozen | Sh. 19 2d. | Sh. 63 | 36.15 | 56.70 |
| | (2) Czechoslovakia | Protamine Zinc Insulin Inj. | Dozen | 40 units/ml. | per dozen | .. | Kcs. 10 | .. | 5.21 |
| | (3) Hungary . | (a) Protamine Zinc Insulin Inj. | 1×10 ml. | | | .. | 31.10 Forints | .. | 10.00 |
| | | Injection 400 | 6×10 ml. | | | .. | 128.20 Forints | .. | 41.22 |
| | | (b) Injection 400E | 1×10 ml. | | | .. | 51.30 Forints | .. | 16.49 |
| | | *Tabs* | | | | | | | |
| | | (c) Bucarban | 20×500 mg. | | | .. | 27.10 Forints | .. | 8.71 |
| | | Tabletta | 250×500 mg.. | | | .. | 293.80 Forints | .. | 94.46 |
| 32 | *I. N. H. Tabs.* | | | | | | | | |
| | (1) U. K. . | Isoniazid Tabs. | 100's | 50 mg. | per dozen | Sh. 19 6d. | Sh. 2 4d. each | 17.55 | 2.10 |
| | (MESCO LABS) | | 100's | 100 mg. | per dozen | Sh. 38 9d. | Sh. 5 d each | 34.88 | 4.50 |
| | (2) Czechoslovakia | Isoniazid Tabs. | 100pc. | 50 mg. | | .. | Kcs. 10 | .. | 5.21 |
| | (3) Hungary . | Isoniazid Tabletta | 200×50 mg. | | | .. | 66 Forints | .. | 21.22 |
| | | | 100×50 mg. | | | .. | 300 Forints | .. | 106.10 |
| | (4) Switzerland . | Isoniazid Rimifon | 100 tabs. | 100 mg. | | .. | 8.15 | .. | 14.12 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 33 *Sod um P A S Tab* | | | | | | | | |
| (1) U K. (MESCO LABS) | Sod um P A.S Tabs | 500 s | 0 5 gm | per d zen | S 181 | Sl 22 6d per t n | 167 90 | 0 25 |
| | | 1000 s | | per dozen | S 319 | Sh 44 3d per t n | 314 10 | 39 83 |
| | | | | | | Kes 128 | | 66 66 |
| (2) Czechoslovak a | Sod um P A.S Tabs | 1000 s | | | | | | |
| (3) Hungary | (a) Tebam nal Natr um Tabletta | 500 x 413mg | | | | 93 80 For nts | | 30 16 |
| | | 2500 x 415mg | | | | 421 Forints | | 135 35 |
| | (b) Tebam nal Natr um/ ntra venous in fuzious oldat Kesz teshez | 24 gm | | | | 55 80 For nts | | 17 94 |
| | (c) Tebam nal drage/ ntest nosolvents | 250 x 300 mg | | | | 47 Fro nts | | 15 11 |
| | | | | | | 12 65 | | 21 91 |
| (4) Sw tzerland | PAS 250 Drag | | | | | 40 85 | | 70 75 |
| | 1000 Drag | | | | | | | |
| 34 *Sodium P A S Granules* | | | | | | | | |
| (1) U K (MESCO LABS) | Sod um P A.S granules | 500 g | | Per dozen | Sl 400 | Sl 57 3d per tin | 396 00 | 47 03 per t n |
| | | 1000 g | | Per dozen | Sh 839 | Sl 103 d per t n | 747 00 | 92 70 per t n |
| 35 *Tetanus Anti Tox n Inj* | | | | | | | | |
| (1) U K. (Burrougs wellcome & Co.) | Tetanus Anti-toxin | 500 i u. | | Each | Sh 1 5 D | Sh 2 6 D | 1 28 | 2 5 |
| | | 10000 i u | | Each | Sh 7 0 D | Sh 13 6 D | 6 90 | 12 15 |
| | | 50000 i u. | | Each | Sl 34 | Sh. 60 | 30 60 | 54 00 |
| (2) Sw tzerland | Tetanus Anti-toxin | 3 amps | | | | 4 2 | | 7 27 |

# TABLE 24.6—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 35 | *Tetanus Anti-Toxin Inj*—Contd. | | | | | | | | |
| | (3) Hungary . | Tetanus Anti-toxin Injection | 1×1 ml. | | | .. | 3.45 | .. | 1.11 |
| | | | 50×1 ml. | | | .. | 107.00 | .. | 34.40 |
| | | | 1×10 ml. | | | .. | 13.70 | .. | 4.40 |
| | | Tetanus serum/ Lo-bol/ | 1×1500 E | | | .. | 11.90 | .. | 3.83 |
| | | | 1×2000 E | | | .. | 106.00 | .. | 34.08 |
| 36 | *Prednisolone Tabs.* | | | | | | | | |
| | (1) U.K. (Glaxo Product) . | Prednilan tabs. (Prednisolone) | 100 | | | Sh. 15 | Sh. 20 | 13.50 | 18.00 |
| | (Pfizer) . | (a) DELTACOR-TRIL (Prednisolone) | Bottle of | | | £ s. d. | £ s. d. | | |
| | | | 100 1 mg. | | | 0 5 6 | 0 8 3 | 4.95 | 7.43 |
| | | | 500 1 mg. | | | 1 4 5 | 1 16 9 | 20.25 | 33.08 |
| | | | 100 5 mg. | | | 0 18 0 | 1 7 0 | 16.20 | 24.30 |
| | | | 500 5 mg. | | | 4 0 0 | 6 0 0 | 72.00 | 108.00 |
| | | (b) DELTA-COR-TRIL ENTERIC Prednisolone enteric coated tabs. | 100 2.5 mg. | | | 0 11 3 | 0 16 10½ | 10.13 | 15.19 |
| | | | 500 2.5 mg. | | | 2 8 9 | 3 13 1½ | 43.88 | 65.81 |
| | (2) Switzerland . | Prednisolone | 20 tabs. | | | 2.90 | | | 5.02 |
| | | | 100 tabs. | | | 9.60 | | | 16.53 |
| | (3) Hungary . | Prednisolone tabletta | 20×5 mg. | | | .. | 50.00 Forints | .. | 16.08 |
| | | | 100×5 mg. | | | .. | 220.90 Forints | .. | 71.02 |
| 37 | *Prednisolone Inj.* U.K. (Pfizer) . | DELTACORTRIL INTRAMUSCULAR/ INTRA-ARTICU-LAR | 25 mg. ml. | | | .. | .. | .. | .. |
| | | Prednisolone Inj. | vial 5 ml. | | | 1 3 0 | 1 14 6 | 20.70 | 31.05 |

24 7 By and large, the prices in the Indian market of formulations compare favourably with the prices of similar formulations in other countries in their domestic markets

24 8 The Organisation of Pharmaceutical Producers of India has stated that the prices of Indian made drugs are lower and that these have remained steady It has argued that the price structure of the drug industry is a highly complex one involving the inter-play of various forces and comparison of the indigenous prices with the prices of similar products in other countries is not valid For, the Indian prices depend upon the country's economy, rates of local taxes and duties, cost of raw materials and labour which are necessarily very much different from those of other cuntries It has also gone on to say that no valid conclusions can be reached by comparison of the prices of particular drugs of one company with the prices of similar drugs of another company in this country or elsewhere and that the examination should be confined to the price structure of the company and not to that of particular drugs Within the total range of the products of a company, it has argued, certain lines may be capable of bearing a higher margin of profit than others and if a high cost drug is pointedly noticed, those of lower costs should also be simultaneously taken into consideration We have, however, received complaints that the prices charged by different indigenous producers for the same product vary greatly as between unit and unit that the prices charged by foreign companies in India are higher than those of their associates in the foreign countries as shown in the examples given below :

| Product | Company | Country | Trade prices | Packing |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| 1 Tolbutamide | Hoechst | In many European countries | $1 85 (Rs 14 01) | 50 tabs |
| | , | In India | $3 57 (Rs 27 04) | 50 ,, |
| 2 Tabs Chlorpropamide | Pfizer | In Italy | $1 41 (Rs 10 68) | 60 ,, 250 mg |
| | | In India | $4 00 (Rs 30 30) | 60 mg tabs in 30' packings |

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 3. Aureomycin. | Cyanamid | Argentina | $1·19 (Rs. 9·01) | 16 caps. 150 mg. |
| | Lederle | In India | $6·92 (Rs. 52·42) | 16 caps. 250 mg. |
| 4. Tetracycline (Achromycin) | Cyanamid | Argentina | $1·19 (Rs. 9·01) | 16 caps. 250 mg. |
| do. | Lederle | In India | $6·52 (Rs. 49·39) | 16 caps. 250 mg. |

24.9. In the case of a number of drugs it has been pointed out that the there is great variation of price for drugs of the same strength and same packing as between different manufacturers as the examples given in Table 24.7 of only four drugs would show :

TABLE 24.7

*Disparity between the prices for the same drugs*

1. *Vitamin B12*

| Sl. No. | Name of formulator | Packing | Wholesale price | Retail price |
|---|---|---|---|---|
| | | | Rs. | Rs. |
| 1 | Alembic Chemical . . . | 5 ml. | 4·25 | 5·31 |
| 2 | Glaxo Labs. . . . . | 5 ml. | 4·28 | 5·28 |
| 3 | Anglo-French . . . . | 5 ml. | 3·30 | 4·00 |
| 4 | Cadila Lab. . . . . | 5 ml. | 2·40 | 2·75 |
| 5 | Therachem . . . . | 5 ml. | 1·50 | 1·75 |
| 6 | Gujarat Pharmaceuticals . . | 5 ml. | 3·60 | 4·50 |

*N.B.*—It was observed that though wholesale and retail price shown in the price list of M/s Therachem Laboratory, Bombay for 5 ml. Injection is Rs. 1·50 and Rs. 1·75 respectively, the manufacturer supplies the same to the dealer at a rate of Rs. 13·50 per dozen and dealer then supplies the same at a rate of Rs. 16·00 per dozen to the doctor.

TABLE 24.7—*Contd*

2. *Chloramphenicol Capsules* (250 *mg* )

| Sl. No | Name of formulator | Packing | Wholesale price | Retail price |
|---|---|---|---|---|
| | | | Rs | Rs |
| 1 | Parke-Davis . . . . | 12 caps | 7 19 | 9 51 |
| 2 | Dey's Medical | 12 caps | 5 55 | 6 59 |
| 3 | Cadila Lab . . | 12 caps | 3 50 | 4 00 |
| 4 | Unique Pharm . . | 12 caps | 3 80 | 4 50 |
| 5 | OPIL . . . | 12 caps | 4 00 | 4 90 |
| 6 | Pan Pharma . . | 12 caps | 4 28 | 4 90 |
| 7 | Alembic Chemical . | 12 caps | 5 45 | 6 81 |
| | | 100 caps | 38 15 | 47 68 |
| 8 | Geoffrey Manners . . . | 20 caps | 6 00 | 7·20 |
| 9 | Therachem Lab. . . . | 100 caps | 22 50 | 26 00 |
| | | 1000 caps | 220 00 | 250 00 |
| 10 | Triumph Products . | 100 caps | 22 00 | 25 30 |
| | | 500 caps | 100 00 | 115 00 |
| | | 1000 caps | 190 00 | 228 00 |
| 11 | Mercury Pharm. . . . | 100 caps | 20 00 | 24 00 |
| | | 500 caps. | 97 50 | 117 00 |
| 12 | British Pharma Laboratory . . | 1000 caps | 190 00 | 228 00 |

*N B* —It was also obse [illegible]
price list of M [illegible]
is Rs 220 and [illegible]
to the deale [illegible] at a rate of Rs 115 to a doctor Similarly wholesale and [illegible]

TABLE 24.7—*Contd.*

3. *Tetracycline Capsules* (250 *mg.*)

| Sl. No. | Name of formulator | Packing | Wholesale price | Retail price |
|---|---|---|---|---|
| | | | Rs. | Rs. |
| 1. | Lederle (Cyanamid) | 4 Caps. | 4·10 | 5·06 |
| 2. | Unique Pharma | 4 Caps. | 2·80 | 3·20 |
| 3. | Dey's Medical | 8 Caps. | 7·74 | 9·19 |
| 4. | Gujarat Pharmaceuticals | 4 Caps. | 3·80 | 4·40 |
| 5. | Pfizer | 8 Caps. | 7·30 | 8·40 |
| 6. | OPIL | 25×4 Caps. | 103·02 | 115·13 |
| | | 4 Caps. | 3·70 | 4·56 |
| | | 8 Caps. | 7·20 | 8·92 |
| | | 100 Caps. | 72·00 | 78·15 |
| | | 1000 Caps. | 650·00 | 768·62 |
| 7. | Pan Pharm. | 4 Caps. | 3·21 | 3·66 |
| 8. | Alembic Chemical | 4×4 Caps. | 14·25 | 17·81 |
| | | 100 Caps. | 87·00 | 108·75 |
| 9. | Hoechst | 5×4 Caps. | 18·10 | 21·72 |
| | | 10×10 Caps. | 83·65 | 106·38 |
| 10. | British Pharma. Laboratory, Bombay | 100 Caps. | 65·00 | 78·00 |
| 11. | Mercury Pharm., Baroda | 100 Caps. | 65·00 | 78·00 |
| 12. | Therachem Lab., Bombay | 100 Caps. | 55·00 | 63·00 |

*N.B.*—It was observed that though wholesale and retail price shown in the price list of M/s Therachem Laboratory, Bombay for 100 capsules is Rs. 55·00 and Rs. 63·00 respectively, the manufacturer supplies the same to the dealer at a rate of Rs. 12·00 only and dealer then supplies the same at a rate of Rs. 17·50 net to a doctor. Similarly wholesale price and retail price, shown in price list of M/s British Pharmaceutical Laboratory, Bombay and M/s Mercury Pharmaceutical, Baroda is Rs. 65·00 and Rs. 78 respectively, the manufacturer supplies to the dealer at a rate of Rs. 12·00 the dealer then supplies the same at a rate of Rs. 13·75 to Rs. 15·00 net to a doctor.

TABLE 24 7—*Concld*

4 *Prednisolone Tablets* (5 *mg*)

| Sl No | Name of formulator | Packing | Wholesale price | Retail price |
|---|---|---|---|---|
| | | | Rs | Rs |
| 1 | Indo Pharm Works | 10 Tabs | 1 70 | 2 00 |
| 2 | Hoechst | 1000 Tabs | 181 20 | 198 16 |
| 3 | Glaxo Labs | 10×10 Strip | 21 59 | 26 59 |
| 4 | Gujarat Pharmaceuticals | Do | 15 00 | 19 59 |
| 5 | Wyeth Labs | Do | 20 00 | 25 00 |
| 6 | Cadila Labs. | Do | 20 00 | 25 00 |
| 7 | Ruby Laboratory | Do | 17 00 | 19 50 |
| 8 | Alembic Chemical | 10 Tabs | 2 18 | 2 72 |
| 9 | Alpha Chemicals | 10×10 Tabs | 20 00 | 23 00 |
| 10 | Pfizer | 100 Tabs | 23 63 | 26 41 |

24 10 It has also been pointed out that in the case of Chloramphenicol one of the units which marketed 1000 capsules at Rs 220 wholesale supplied the same to doctors at Rs 115 In the case of two other units the same packing for which the wholesale price was Rs 190 was sold to doctors at between Rs 93 and Rs 95 The same units offered Tetracycline at about one fourth the wholesale price to doctors Some of the comparative prices of formulations charged by indigenous manufacturers as furnished by the Indian Drug Manufacturers' Association are as follows

TABLE 24.8

*Variations in the prices of formulations charged by indigenous manufacturers as furnished by the Indian Drug Manufacturers' Association*

| Sl. No. | Name of the product | Packing | Price ranging between |
|---|---|---|---|
| | | | Rs. |
| 1 | Vitamin B12 100 mcg. . . | 10 m. vial | 1·50 to 3·00 |
| 2 | Vitamin C 50 mg. . . . | 1000 tbs. | 11·00 to 16·25 |
| 3 | Phthalyl Sulphathiazone tbs. 0·5g | 1000 tbs. | 22·00 to 56·00 |
| 4 | Tablets Sulphathiazone 0 5g . | 500 tbs. | 8·00 to 21·50 |
| 5 | Tab. Sulphadiazine . . . | 100 tbs. | 16·50 to 28·50 |
| 6 | Chloromycetin Capsules . . | 12 caps. | 2·20 to 7·62 |
| 7 | Aureomycine capsules . . | 4 caps. | 3·28 to 4·25 |
| 8 | Tetracycline capsules . . | 4 caps. | 3·28 to 4·36 |
| 9 | Tablets of Iodo-chlor-hydroxy-quinoline. | 500 tbs. | 12·00 to 41·40 |
| 10 | Tab. Chloroquin. Phosph. . . | 250 tbs. | 20·00 to 333·00 |
| 11 | Tablets Tolbutamide 0·5 . | 1000 tabs. | 70·00 to 228·00 |
| 12 | Prednisolone Tablets . . . | 10 tabs. | 1·35 to 2·25 |
| 13 | Methyl Testostrone Tab. 10 mg. . | 25 tabs. | 3·00 to 11·60 |
| 14 | Doothylcarbamazine citrate tab. 50 mg. . . . . . . | 1000 tabs. | 28·00 to 60·80 |
| 15 | Meprobomate 400 mg. Tab. . | 50 tabs. | 3·00 to 12·00 |
| 16 | Nikethamide Drops . . . | 100 ml. | 7·00 to 18·75 |
| 17 | Tab. Acetazolamide . . . | 30 tabs. | 18·00 to 28·00 |

These figures show that vast disparities exist even in the internal market as between the prices charged by one unit and another.

24.11. One of the terms of reference to us is to examine the difference in prices of the formulations when sold under "brand names" and "common names". We find that in the majority of cases formulations have brand names also but in a few cases no brand names exist and the formulations are sold under the generic names. To the extent that such cases can be extracted the position of the range of difference between preparations sold under generic names and brand names is shown in Table 24.9 :

TABLE 24 9

*Formulations sold under generic names* vis a vis *brand names*

(Price in Rs)

| Sl No | Name of Formulation | Dosage | Pack | Unit of pricing | Selling prices when sold under generic names | | | Selling prices when sold under Brand Names | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Name of unit | Whole sale price Rs. | Retail price Rs | Name of unit | Brand Name | Whole sale price Rs. | Retail price Rs |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | *Vitamin B 12 Injection* | 100 mcg/ml | Per 10 ml Vial | Per Vial | Anglo French | 1 86 | 2 25 | British Drug House | ANACOBIN | 2 46 | 3 06 |
| | | | | | Bengal Immunity | 1 10 | 1 32 | OPIL | CYANOCOBALAMIN | 1 10 | 1 26 |
| | | | | | Unichem Labs | 2 20 | 2 50 | Therapeutic Pharmaceuticals | CYANOMIN | 2 04 | 2 40 |
| | | | | | Rallis India | 2 56 | 3 01 | Khandelwal Labs | CYNOPLON | 1 60 | 1 90 |
| | | | | | Gurco Pharma | 1 00 | 1 25 | Merck Sharp | REDISOL | 2 57 | 3 17 |
| | | | | | Zandu | 1 27 | 1 50 | Glaxo Labs | MACRABIN | 2 57 | 3 17 |
| | | | | | Shetty's Pharmaceuticals | 1 19 | 1 40 | Mac Lab | COBMAC | 1 70 | 2 00 |
| | | 500 mcg/ml | Per 5 ml Vial | Per Vial | Rallis India | 4 21 | 4 91 | CIPLA | CIPLAMIN | 4 28 | 5 28 |
| | | | | | Gurco Pharma | 1 50 | 1 87 | Sarabhai Chemicals | RUBRAMIN | 4 28 | 5 28 |
| | | | | | Zandu | 1 79 | 2 10 | British Drug House | ANACOBIN | 4 07 | 5 02 |
| | | | | | Shetty's Pharmaceuticals | 2 12 | 2 50 | Dey's Medical | VITADONZE | 3 .2 | 4 18 |

TABLE 24.9—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 *Vitamin Injection* | B-12—Contd. | 500 mcg/ml | Per 5 ml Vial | Per Vial | | | | Albert David | SICOBIN | 2.75 | 3.30 |
| | | ,, | ,, | ,, | | | | Cadila Labs | COBALMIN | 2.40 | 2.75 |
| | | ,, | ,, | ,, | | | | Therapeutic Pharmaceuticals | CYANOMIN | 3.77 | 4.45 |
| | | ,, | ,, | ,, | | | | Khandelwal Labs. | CYNOPLON | 2.50 | 2.95 |
| | | ,, | ,, | ,, | | | | Merck Sharp | REDISOL | 4.28 | 5.28 |
| | | ,, | ,, | , | | | | Alembic Cehmical | CYCOBAL | 4.25 | 5.31 |
| | | | | | | | | Mac Labs | COBMAC | 2.97 | 3.50 |
| | | ,, | ,, | ,, | | | | Pfizer | DUVIT | 4.37 | 4.89 |
| | | ,, | ,, | ,, | | | | OPIL | CYANOCOBALAMIN | 1.75 | 2.00 |
| | | 1000 mcg/ml | ,, | ,, | Anglo French | 5.78 | 7.00 | CIPLA | CIPLAMIN | 6.00 | 7.50 |
| | | ,, | ,, | ,, | Bengal Immunity | 4.00 | 4.80 | Sarabhai Chemicals | RUBRAMIN | 7.49 | 9.24 |
| | | ,, | 5×10 ml | ,, | Unichem Labs. | 7.00 | 8.00 | British Drug House | ANACOBIN | 7.06 | 8.71 |
| | | ,, | ,, | ,, | Rallis India | 7.41 | 8.66 | Dey's Medical | VITADOUZE | 6.14 | 7.29 |
| | | ,, | ,, | ,, | Gurco Pharma | 2.75 | 3.44 | Albert David | SICOBIN | 3.75 | 4.50 |
| | | ,, | ,, | ,, | Zandu | 2.97 | 3.50 | Therapeutic Pharmaceuticals | CYANOMIN | 6.46 | 7.60 |
| | | ,, | ,, | ,, | Shetty's Pharmaceuticals | 3.00 | 4.50 | Khandelwal Labs. | CYNOPLON | 4.25 | 5.00 |
| | | ,, | ,, | ,, | | | | Merck Sharp | REDISOL | 7.49 | 9.24 |
| | | ,, | ,, | ,, | | | | Alembic Chemical | CYCOBAL | 7.45 | 9.31 |
| | | ,, | ,, | ,, | | | | Mac Labs. | COBMAC | 4.67 | 5.50 |
| | | | | | | | | Pfizer | LUVIT | 7.68 | 8.59 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | *Vitamin B 12(b)* | 500 mcg/ml | 5 ml per Vial | ,, | Anglo-French | 3 96 | 4 80 | Sarabhai Chemicals | RUBRAMIN II | 4 28 | 5 28 |
| | | ,, | ,, | ,, | CIPLA | 4 20 | 5 28 | Therapeutic Pharmaceuticals | CYANOMIN II | 4 25 | 5 00 |
| | | ,, | ,, | ,, | Unichem Labs. | 4 20 | 4 60 | Gujarat Pharmaceuticals | COBIN II | 3 73 | 4 37 |
| | | ,, | 10×5 ml | , | Gurco Pharma | 3 73 | 4 37 | Glaxo Labs | MACRABIN | 4 28 | 5 28 |
| | | ,, | 10×5 ml | ,, | Khandelwal Labs. | 3 80 | 4 30 | Merck Sharp | REDISOL-II | 4 92 | 6 07 |
| | | 1000 mcg/ml | 5 ml Vial | ,, | Anglo French | 7 01 | 8 50 | Sarabhai Chemicals | RUBRAMIN II | 7 49 | 9 24 |
| | | ,, | ,, | ,, | | | | Gujarat Pharmaceutical | COBIN II | 6 00 | 7.50 |
| | | | | | | | | Glaxo Labs | MACRABIN | 7 49 | 9 24 |
| | | | | | | | | Merck Sharp | REDISOL-II | 8 62 | 10 63 |
| 3 | *Vitamin C-Tabs* | 100 mg | 1000 Tabs | Per Pack | *Anglo French* | 13 20 | 16 00 | CIPLA | CETAMID | 20 34 | 25 09 |
| | | | | | Dey's Medical | 15 00 *(Tin)* | 18 00 | Bengal Immunity | ASCACID | 15 65 | 19 02 |
| | | | | | *Kemp & Co.* | 27 50 | 33 00 | Cadila Labs | ASCORCIN | 14 00 | 16 10 |
| | | | | | Albert David | 25 00 | 30 00 | Glaxo Labs | CELIN | 21 41 | 26 41 |
| | | | | | Martin & Harris | 14 51 | 17 05 | | | | |
| | | | | | OPIL | 22 00 | 25 30 | | | | |
| 4 | *DI Hydrostreptomycin Sulphate Injection* | 1 gm | 10 Vials pack | Per Pack | Sarabhai Chemicals | 5 92 | 6 56 | Merck Sharp | DYSTREP | 5 80 | 6 44 |
| 5 | *Chloramphenicol Caps* | 250 mg | 12 caps pack | Per Pack | CIPLA | 4 80 | 5 70 | Boehinger-Knoll | CHLORAMAPHYCIN | 6 13 | 7 13 |
| | | | | | | | | May & Baker | EMBACETIN | 5 74 | 6 34 |
| | | | | | | | | Alembic Chemical | AICOPHENICOL | 5 45 | 6 81 |
| | | | | | | | | Dey's Medical | ENTEROMYCETIN | 5 55 | 6 89 |
| 6 | *Tetracycline Caps* | 250 mg | 12×4 pack | Per Pack | Sarabhai *Chemicals* | 45 49 | 56 11 | Cyanamid | ACHROMYCIN | 42 50 | 53 12 |

TABLE 24.9—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | *Chloroquine Tabs* | 0.25 mg | Box of 100 Tabs | per box | Bengal Immunity | 8.00 | 9.60 | Unichem Labs. | UNIQUIN | 8.20 | 8.95 |
| 8 | *Iodochlor-hydroxy-quinoline Tabs* | 0.25 gm | 500 Tabs in strips | per strip | Unichem Labs. | 26.25 | 28.75 | Bengal Chemical | ENTEROKIN | 23.80 | 28.00 |
| | | | | | | | | Albert David | QUINOFORM | 16.00 | 19.20 |
| | | | | | | | | Therapeutic Pharmaceuticals | AMIDOCLOR | 20.40 | 24.00 |
| 9 | *Di-iodo-hydroxy-quinoline Tabs* | 0.21 gm | 500 Tabs pack | per pack | CIPLA | 4.50 | 5.40 | Zandu | HISTOQUIN | 3.40 | 4.00 |
| 10 | *Chlorpropamide* | 0.25 gm | 100 Tabs pack | per pack | Haffkine | 14.00 | N.A. | Albert David | DIALANE | 16.00 | 19.20 |
| | | | | | | | | Gujarat Pharmaceuticals | CHLORINESE | 13.00 | 14.30 |
| 11 | *INH Tabs* | 50 mg | 100 Tabs pack | per pack | Bengal Immunity | 1.15 | 1.38 | Glaxo Labs. | PELAZID | 1.17 | 2.11 |
| | | | | | Chemo Pharma | 2.20 | 2.75 | Sarabhai Chemicals | NYDRAZID | 2.04 | 2.30 |
| | | | | | Dey's Medical | 1.50 | 1.60 | | | | |
| | | | | | Albert David | 1.00 | 1.20 | | | | |
| | | | | | Martin & Harris | 1.34 | 1.60 | | | | |
| | | | | | OPIL | 1.35 | 1.55 | | | | |
| | | | | | Biological Evans | 1.54 | 1.84 | | | | |
| | | 50 mg | 1000 Tabs pack | per pack | Biological Evans | 8.20 | 9.10 | Glaxo Labs | PELAZID | 12.28 | 15.28 |
| | | | | | Bengal Immunity | 8.00 | 9.60 | Sarabhai Chemicals | NYDRAZID | 12.60 | 15.43 |
| | | | | | Bengal Chemical | 10.20 | 12.00 | | | | |
| | | | | | Chemo-Pharma | 15.24 | 19.05 | | | | |
| | | | | | Dey's Medical | 11.00 | 13.20 | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 100 mg | 100 Tabs per pack pack | Biolog cal Evans | 2 30 | 2 82 | Glaxo Labs | I ELARID | 2 56 | 3 19 |
| | | | | Bengal Immunity | 1 70 | 2.04 | Alemb c Che mical | ALZIDE | 2 60 | 3 25 |
| | | | | Chemo-Pharma | 3 30 | 4 12 | Sarabhai Che micals | NYDRAZID | 2 82 | 3 51 |
| | | | | Dey's Medical | 2 75 | 3 30 | Unichem Labs | UNIZYDE | 2 85 | 3 10 |
| | | 100 mg | 1000 Tabs per pack pack | B ological Evans | 14 33 | 17 15 | Glaxo Labs | PELAZID | 20 47 | 25 47 |
| | | | | Bengal Immunity | 14 00 | 16 80 | Alemb c Che mical | ALZIDE | 20 60 | 25 75 |
| | | | | Sm th Stanistreet | 19 50 | 23 40 | Sarabhai Che micals | NYDRAZID | 20 73 | 25 79 |
| | | | | Chemo Pharma | 24 36 | 30 45 | Unichem Labs | UNIZYDE | 21 00 | 23 00 |
| | | | | Dey's Medical | 20 00 | 24 00 | Cadilla Labs | CADZIDE | 20 50 | 23 55 |
| | | | | South India Res Insti | 18 00 | 20 70 | Zandu | ISOZIDE | 20 82 | 24 50 |
| | | | | Albert David | 17 00 | 20 40 | | | | |
| | | | | Martin & Harris | 20 42 | 24 00 | | | | |
| | | | | Shetty's Phar maceuticals | N A | 15 00 | | | | |
| 12 | *Prednisolone Tabs* | 5 mg | 100 Tabs per pack pack | Dey's Medical | 18 50 | 22 20 | Pfizer | DELTACORTRIL | 23 63 | 26 41 |
| | | | | OPIL | 16 00 | 18 40 | Boots | DELTASTAB | 18 10 | 22 50 |
| | | | | CIPLA | 18 00 | 21 00 | | | | |
| | | | | Gurco Pharma | 15 00 | 18 75 | Hoechst | LOSTACORTIN | 20 00 | 24 00 |
| | | | | Zandu | 12 75 | 15 00 | Therapeut c Pharmaceuticals | PRENILON | 16 57 | 19 50 |
| | | | | | | | Ranbaxy Labs | NISONE | 20 00 | 25 00 |

24 12 The analysis in Table 24 9 indicates that it is not because of the generic name that the price ranges are comparatively lower but because of the units which manufacture them By and large, the units in the large scale sector and amongst them those which have established names and are bigger than others have higher prices than units which are not so well-known and are

not comparable in size. Surprisingly enough even though the contrary should be the fact, price differentials are in the present analysis more a factor of standing and size of the units than of the brand name itself.

24.13. Almost all Government purchases are made by generic names even though the drugs supplied have also brand names under which the manufacturer sells them in the market. Owing to a certain degree of monopsony that the Government enojoys the prices at which drugs are purchased are substantially lower than the prices at which these drugs are sold to the general public. We have made an analysis of the comparative rates and these are given in Table 24.10.

### TABLE 24.10

*Selling prices of formulations for Government compared to those for public*

| Sl. No. | Name of the formulation | Brand name | Dosage | Pack | Unit packing | Whole-sale price | Maximum retail price | Price for Government | Difference between (8) and (9) as % of (8) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | **(A) *Selling prices of single drug formulations*** | | | | | | | | |
| | *Vitamin-A Tablets* | | | | | | | | |
| 1 | Roche Products . | AROVIT | 0.5 lac Iu/tab | Pack of 200 Tablets | per Pack | 42.70 | 52.70 | 37.50 | 29.00 |
| | *Vitamin-B-12 Injection* | | | | | | | | |
| 1 | Sarabhai Chemicals . | RUBRAMIN | 100 mcg/ml | 5 ml vial | per vial | 1.61 | 1.99 | 1.60 | 19.6 |
| 2 | Smith Stanistreet . | COBASTAN | 500 mcg/ml | 5 ml vial | per vial | 4.28 | 5.28 | 4.25 | 19.5 |
| | | | 1000 mcg/ml | 5 ml vial | per vial | 7.49 | 9.24 | 7.45 | 19.4 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3 Therapeutic Pharma ceuticals | CYANOMIN | 100 mcg/ml | 10 ml vial | per vial | 2 04 | 2 40 | 3 per cent less of wholesale price | 2 3 |
| | | | 10×10 ml vial | per 10 vials | 16 15 | 19 00 | | 12 7 |
| | | 500 mcg/ml | 5 ml vial | per vial | 3 77 | 4 45 | | 12 8 |
| | | | 10×5 ml vial | per 10 vials | 32 30 | 38 00 | | 12 7 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 6 46 | 7 60 | | 12 8 |
| | | | 10×5 ml vial | per 10 vials | 53 76 | 63 25 | | 8 1 |
| 4 Merck Sharp | REDISOL | 100 mcg/ml | 5 ml vial | per vial | 1 61 | 1 99 | 0 75 to 1 28 | 32 to 60 |
| | | | 10 ml vial | per vial | 2 57 | 3 17 | 1 00 to 2 04 | 32 to 67 |
| | | 500 mcg/ml | 5 ml vial | per vial | 4 28 | 5 20 | 1 60 to 3 40 | 32 to 68 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 7 49 | 9 24 | 3 00 to 5 95 | 32 to 66 |
| 5 Glaxo Labs | MACRABIN | 100 mcg/ml | 5 ml vial | per vial | 1 61 | 1 99 | 1 28 | 35 7 |
| | | | 10 ml vial | per vial | 2 57 | 3 17 | 2 04 | 35 7 |
| | | 500 mcg/ml | 5 ml vial | per vial | 4 28 | 5 28 | 3 40 | 35 6 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 7 49 | 9 24 | 5 95 | 35 6 |
| 6 Alembic Chemical | CYCOBAL | 100 mcg/ml | 5 ml vial | per vial | 1 60 | 2 00 | 1 30 | 35 0 |
| | | 500 mcg/ml | 5 ml vial | per vial | 4 25 | 5 31 | 3 43 | 35 4 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 7 45 | 9 31 | 6 00 | 35 6 |
| *Vitamin B 12 (b)* | | | | | | | | |
| 1 Sarabhai Chemicals | RUBRAMIN H | 500 mcg/ml | 5 ml vial | per vial | 4 28 | 5 28 | 4 91 | 7 00 |
| | | 1000 mcg/ml | 5 ml vial | per vial | 7 49 | 9 24 | 8 59 | 7 1 |
| 2 Therapeutic Pharma ceuticals | CYANOMIN H | 500 mcg/ml | 5 ml vial | per vial | 4 25 | 5 00 | Less 5% | 14 4 |

# TABLE 24.10—Contd.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| *Vitamin B-12(b)—(Contd.)* | | | | | | | | | |
| 3 | Merck Sharp | REDISOL-H | 500 mcg/ml | 5 ml vial | per vial | 4.92 | 6.07 | 3.50 to 3.91 | .. |
| | | | 1000 mcg/ml | 5 ml vial | per vial | 8.62 | 10.63 | 6.20 to 6.84 | .. |
| *Vitamin C-Tabs.* | | | | | | | | | |
| 1 | Sarabhai Chemicals | ASCORBICIN | 250 mg | 20's bottle | per bottle | 1.31 | 1.65 | 1.33 | 19.4 |
| 2 | Cyanamid | CHEWCEL | 500 mg | 100's bottle | per bottle | 5.35 | 6.60 | 5.13 | 19.2 |
| 3 | Glaxo Labs. | CELIN | 50 mg tab | 10×10's pack | per pack | 18.00 | 22.50 | 16.20 | 28.0 |
| | | | | 100's pack | per pack | 1.87 | 2.31 | 2.06 | 10.8 |
| | | | 100 mg tab | 1000's pack | per pack | 13.91 | 17.16 | 15.35 | 10.5 |
| | | | | 100's pack | per pack | 2.68 | 3.31 | 2.96 | 10.6 |
| | | | 500 mg tab | 1000's pack | per pack | 21.41 | 26.41 | 23.63 | 10.5 |
| 4 | Alembic Chemical | CIVINAL | 50 mg/tab | 20's pack | per pack | 2.68 | 3.31 | 2.96 | 10.6 |
| 5 | Roche Products | REDOXON | 50 mg/tab | 500's pack | per pack | 52.40 | 61.40 | 57.74 | 10.3 |
| | | | | 1000's pack | per pack | 10.90 | 13.62 | 12.00 | 11.9 |
| | | | | 20's pack | per pack | 0.91 | 1.12 | 0.86 | 23.2 |
| | | | | 100's pack | per pack | 3.90 | 4.81 | 3.67 | 23.7 |
| | | | 200 mg/tab | 250's pack | per pack | 9.29 | 11.46 | 8.74 | 23.7 |
| | | | | 20's pack | per pack | 2.83 | 3.49 | 2.66 | 23.8 |
| | | | 500 mg/tab | 100's pack | per pack | 12.49 | 15.41 | 11.76 | 23.7 |
| | | | | 100's pack | per pack | 16.28 | 20.09 | 18.10 | 9.0 |
| | | | | 10×10's pack | per pack | 19.22 | 23.72 | 15.33 | 35.1 |
| | | | | 500's pack | per pack | 72.59 | 89.59 | [illegible] | [illegible] |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Sulphadiazine Tabs* | | | | | | | | |
| 1 | May & Baker | | 0 5 gm/tab | 10×10 s pack | per pack | 5 31 | 6 34 | 5 74 | 9 5 |
| | | | | 50×10 s pack | per pack | 26 60 | 31 69 | 28 69 | 9 3 |
| 2 | Cyanamid | | 0 5 gm/tab | 500 s pack | per pack | 25 00 | 31 25 | 16 20 | 48 2 |
| | *Sodium Penicillin G Inj* | | | | | | | | |
| | Sarabhai Chemicals | | 2 lac u/ml | Box of 10 vial | per box | 4 29 | 4 76 | 4 61 | 7 4 |
| | | | 5 lac u/ml | Box of 10 vial | per box | 6 23 | 6 91 | 6 41 | 7 2 |
| | | | 10 lac u/ml | Box of 10 vial | per box | 10 31 | 11 40 | 9 87 | 15 5 |
| | *Procaine Penicillin Inj* | | | | | | | | |
| | Sarabhai Chemicals | CRYSTICILLIN | 30 lac units 10 dose | vial box 10 vials | per box | 24 52 | 25 88 | 24 46 | 5 5 |
| | *Penicillin Tablets* | | | | | | | | |
| | Sarabhai Chemicals | PENTIDS | 2 lacs units | 48 tabs pack | per pack | 8 63 | 9 57 | 8 87 | 7 3 |
| | *Streptomycin Sulphate Inj* | | | | | | | | |
| 1 | Merck Sharp | MERSTREP | 1 gm | 10 vials pack | per pack | 5 80 | 6 44 | 5 31 | 14 4 |
| 2 | Sarabhai Chemicals | AMBYSTRYN S | 1 gm | 10 vials box | per box | 6 84 | 7 60 | 6 09 | 6 7 |
| | *Di hydrostreptomycin Sul Inj* | | | | | | | | |
| | Sarabhai Chemicals | | 1 gm. | 10 vials | per pack | 5 92 | 6 56 | 6 09 | 7 5 |
| | *Tetracycline caps* | | | | | | | | |
| 1 | Sarabhai Chemicals | STECLIN | 250 mg | 12×4 caps pack | per pack | 45 39 | 56 11 | 45 15 | 19 5 |
| 2 | Hoechst | HOSTACYCLINE | 250 mg | Strip of 5×4 caps | per strip | 18 10 | 21 72 | 17 25 | 20 6 |
| 3 | Cyanamid | ACHROMYCIN | 250 mg | 4 caps pack | per pack | 3 86 | 4 82 | 2 89 | 40 00 |
| | | | | 12×4 caps pack | per pack | 42 50 | 53 12 | 31 87 | 40 00 |
| | | | | 24×4 caps pack | per pack | 83 70 | 104 62 | 62 87 | 39 90 |
| | | | | 25×4 caps pack | per pack | | | 65 40 | |

TABLE 24.10—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| | *Tetracycline Caps* (contd.) Cyanamid (contd.) | ACHROMYCIN-V | 250 mg. | 4 Caps pack | per pack | 3.86 | 4.82 | 2.89 | 40.00 |
| | | | | 12×4 Caps pack | per pack | 42.50 | 53.12 | 31.87 | 40.00 |
| | | | | 24×4 Caps pack | per pack | 83.70 | 101.62 | 62.78 | 39.90 |
| | | ACHROMYGIN-S.V. | 250 mg. | 4 Caps pack | per pack | 4.08 | 5.02 | 3.01 | 40.00 |
| | | | | 12×4 Caps pack | per pack | 44.20 | 55.25 | 33.15 | 40.00 |
| | *Demethyl Tetracycline* | *Caps* | | | | | | | |
| | Cyanamid | LEDERMYCIN | 150 mg. | 4 caps pack | per pack | 4.19 | 5.24 | 3.18 | 39.3 |
| | | | | 12×4 Caps pack | per pack | 16.19 | 57.74 | 35.06 | 39.3 |
| | | | | 24×4 Caps pack | per pack | 90.98 | 113.72 | 69.06 | 39.3 |
| | | | | 25×4 Caps pack | per pack | .. | .. | 71.94 | .. |
| | | | 300 mg. | 2 Caps pack | per pack | 4.19 | 5.24 | 3.18 | 39.3 |
| | | | | 12×12 Caps pack | per pack | 46.19 | 57.74 | 35.06 | 39.3 |
| | | | | 24×2 Caps pack | per pack | 90.98 | 113.72 | 69.06 | 39.3 |
| | *Iodo-chlor-hydroxy-quinoline Tabs.* | | | | | | | | |
| 1 | Smith Stanistreet | STANQUINATE | 250 mg. | 10×10 Strip | per strip | 7.00 | 8.60 | 4.00 | 53.3 |
| | | | | 500's bottle | per bottle | 30.00 | 37.00 | 16.00 | 56.8 |
| 2 | East India Pharmaceutical | ENTROQUINOL | 250 mg. | 20's pack | per pack | 1.85 | 5% less 2.25 sale | whole-price | 21.8 |
| | *Tolbutamide Tabs.* | | | | | | | | |
| | Hoechst | RASTINON | 0.5 g. | 10×10 Strip | per strip | 21.95 | 26.34 | 20.95 | 20.5 |
| | | | | 100×10 Strip | per strip | 183.00 | 219.60 | 172.00 | 21.7 |
| | | | | 1000 Tabs. pack | per pack | .. | 219.60 | 172.00 | 21.7 |
| | | | | 5×20 ml. box | per box | 15.75 | 18.90 | 15.00 | 20.6 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Insulin Inj* | | | | | | | | |
| Burroughs Wellcome | | 40 units per ml | 10 ml vial | per vial | 3 84 | 4 77 | 10% discount | 27 5 |
| *Insulin Protam ne Zinc Inj* | | | | | | | | |
| Burroughs Wellcome | | 40 units per ml | 10 ml vial | per vial | 4 60 | 5 73 | 10% discount | 7 |
| *I N H Tabs* | | | | | | | | |
| 1 Biological Evans | | 100 mg | 1000 Tabs pack | per pack | 14 35 | 17 15 | 12 00 | 30 0 |
| | | | 5000 Tabs pack | per pack | 66 62 | 79 62 | 58 00 | 27 2 |
| 2 Sarabhai Chemicals | NYDRAZID | 50 mg | 100 Tabs pack | per pack | 2 04 | 2 30 | 1 97 | 14 30 |
| | | | 1000 Tabs pack | per pack | 12 40 | 15 43 | 12 93 | 16 2 |
| | | 100 mg | 100 Tabs pack | per pack | 2 82 | 3 51 | 2 94 | 16 2 |
| | | | 1000 Tabs pack | per pack | 20 73 | 5 79 | 21 60 | 16 2 |
| *P A S Granules* | | | | | | | | |
| 1 Biological Evans | | 55% | 1000 Gm pack | per pack | 35 87 | 42 87 | 34 00 | 20 70 |
| 2 Hoechst | | 48 7% | 100 Gm pack | per pack | 4 25 | 5 10 | 4 05 | 20 6 |
| | | | 250 Gm pack | per pack | 9 90 | 11 88 | 9 45 | 20 5 |
| *Tetanus Anti toxin Inj* | | | | | | | | |
| Biological Evans | | 1500IU/amps | Single amp | per amp | 1 75 | 2 10 | 1 60 | 23 8 |
| | | 10000IU/vials | Single vial | per vial | 10 00 | 12 00 | 9 00 | 25 00 |
| | | 50000IU/vials | Single vial | per vial | 40 00 | 48 00 | 36 00 | 25 00 |
| *Prednisolone Tabs* | | | | | | | | |
| Hoechst | HOSTACORTIN H | 5 mg | 10×10 Tabs Strip | per strip | 20 00 | 24 00 | 19 10 | 20 00 |
| | | | 100×10 Tabs Strip | per strip | 181 20 | 218 16 | 176 10 | 19 3 |

TABLE 24.10—*Concld.*

*B. Selling prices for multiple drug formulation*

| Sl. No. | Name of formulation | Brand name | Drugs contained and dosage | Pack | Unit for pricing | Wholesale price | Maximum retail price | Price for Government | Difference between (8) and (9) as % of (8) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | | | *Combination of different forms of Penicillin* | | | | | | |
| 1. | Sarabhai Chemicals . | CRYS-4 | Procaine Penicillin 2 lac units, Sod. Penicillin 4 lac Units (1 dozn). | 10 vials box | per box | 5.62 | 6.23 | 5.23 | 16.1 |
| | | CRYS-8 | Procaine Penicillin 6 lac units, Sodium Penicillin 8 lac Units. | 10 vials box | per box | 8.50 | 9.50 | 7.98 | 16.0 |
| | | CRYS-12 | Procaine Penicillin 9 lac units. Sodium Penicillin 12 lac units. | 10 vials box | per box | 12.05 | 13.10 | 11.21 | 16.3 |
| | | | *Combination of different forms of Strep tomycin* | | | | | | |
| | Sarabhai Chemicals . | AMBYSTRYON | Streptomycin 0.5 gm Dihydrostreptomycin 0.5 gm. | 10 vials box | per box | 5.92 | 6.56 | 6.00 | 7.2 |
| | | | *Injection of Penicillin and Streptomycin* | | | | | | |
| | Sarabhai Chemicals . | PENMYN | Sod. pen 5. lac units streptomycin 0.25 gm. | 10 vials box | per box | 7.25 | 8.10 | 6.75 | 16.7 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | PENMYN FORTIS | Sod pen G 5 lac units strepto mycin 0 5 gm | 10 vials box | per box | 8 47 | 9 39 | 8 47 | 0 8 |
| | DICRYSTICIN 800 | Procaine P G 3 lac units Sod. P 1 lac units and streptomycin 0 50 gm (1 dose) | 10 vials box | per box | 11 74 | 13 02 | 12 08 | 7 2 |
| | DISCRYSTICIN S | Procaine pen. G3 lac units and strep tomycin 0 5 gm Sod pen 1 lac | 1 dose box of 10 vials | per box | 7 66 | 8 50 | 7 13 | 16 1 |
| | DISCRYSTICIN S FORTE | Procaine pen G 3 lac units Sod pen 1 lac units and streptomycin 1 gm (1 does) | 10 vials box | per box | 10 21 | 11 30 | 9 50 | 15 9 |
| | DICRYSTICIN S Pediatric | Procaine pen 3 lac units Sod pen. 1 lac units and streptomycin 0 25 gm | 10 vials box | per box | 6 84 | 7 58 | 7 04 | 7 9 |
| | | *Injection of Tetracycline and Vitamin C* | | | | | | |
| Cyanamid | ACHROMYCIN | Tetracycline & Vitamin C | 250 mg Vial | Per vial | 5 70 | 7 13 | 4 28 | 40 00 |
| | | | 500 mg Vial | Per vial | 3 23 | 11 54 | 6 92 | 40 00 |
| | | *Tabs of I N H & P A S* | | | | | | |
| Smith Stanistreet | DIPASON | P A S and I N H | 500 tabs pack | per pack | 28 00 | 35 85 | 25 20 | 27 7 |

# CHAPTER 25

## COMPARISON OF PRICES AT WHICH BASIC DRUGS AND FORMULATIONS ARE SOLD BY MANUFACTURERS

25. In the reference sent to us by Government one of the points was the examination of the factors relating to the prices at which formulations were sold by manufacturers to Government *vis-a-vis* the prices at which basic drugs manufactured by them were sold to other formulators. The value of the basic drugs contained in formulations is, as would appear from Table 25.1 which follows, comparatively small; and even though we have made an analysis we have come to the conclusion that no comparison can be made between the prices of the formulations as sold to Government and the prices of the equivalent quantity of bulk drug contained in the formulation as the latter is sold to other formulators. The prices of formulations are invariably very much higher as may be seen from the Table given below :

TABLE 25.1

*Basic drug producers prices for single drug formulations sold to Government and for the basic drugs sold to formulators*

| Sl. No | Formulation | Manufacturing unit with the brand name if any, in brackets | Basic drug contained | Price of formaulation as charged by the manufacturing unit for Government | | Value of basic drug contained in the formulation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Packing | Price (Rs.) | Unit | Qty. of basic drug contained | Price per unit of basic drug (Rs.) | Value of basic drug contained (Rs.) | %age of col.(10) to col. (6) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Vitamin A Inj. | 1. Glaxo Labs. (PREPALIN) | Vitamin-A | 1 lac. IU/ml. 6×1 ml carton | 3.71 | mu | 0.6 | 0.594 | 0.3564 | 9.6 |
| | | 2. Roche Products (AROVIT) | Vitamin-A | 3 lac. IU/ml 3 ×1 ml amp. | 5.63 | mu | 0.9 | 0.594 | 0.5346 | 9.5 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Vitam n A Tabs | Roche Prod icts(AROVIT) | V tam n A | 0 5 lac IU/tab 200 tabs/pack | 37 50 | mu | 10 0 | 0 594 | 5 94 | 15 8 |
| 3 | Vitamin A Caps | Glaxo Labs | Vitam n A | 0 24 lac IU/ml 100 caps | *9 63 | mu | 2 4 | 0 594 | 1 4256 | 14 0 |
| 4 | Vitam n B12 Inj | 1 Merck Sharp (RADISOL) | V tamin B12 | 0 0001 gm/ml 10 ml vial | 2 21 | gm | 0 001 | 175 0 | 0 175 | 7 9 |
| 5 | Vitamin B12 (b)(Inj ) | 1 Glaxo Labs (MACRABIN H) | Vitam n B12 | 0 0005 gm/ml (b) 5 ml vial | 3 66 | gm | 0 0025 | 330 0 | 0 825 | 22 5 |
| | | 2 Merck Sharp (RADISOL-H) | Vitam n B12 | 0 0005 gm/vial 5 ml vial | 3 66 | gm | 0 0025** | 134 32 | 0 3358 | 10 4 |
| 6 | Sulphad azine Tabs | May & Baker | Sulphadiazine | 0 5 gm/50 × 10 tabs | 26 19 | gm | 250 0 | 0 065 | 16 25 | 62 0 |
| 7 | Sod Pen G Inj | 1 H ndustan Anti b otics | Pen cillin | 2 lac Iu/ml s ngle vial | *0 42 | mu | 0 2 | 0 400 | 0 08 | 19 0 |
| | | | | 5 lac single vial | *0 61 | mu | 0 5 | 0 400 | 0 20 | 32 8 |
| | | | | 10 lac s ngle vial | *0 94 | mu | 1 0 | 0 400 | 0 40 | 42 6 |
| | | 2 Alemb c Chem cal | Penicili n | 2 lac Iu/ml 5 vials | 2 00 | mu | 1 0 | 0 50 | 0 50 | 25 0 |
| | | | | 5 lac Iu/ml 5 vials | 2 90 | mu | 2 5 | 0 50 | 1 25 | 43 1 |
| | | | | 10 lac Iu/ml 5 vials | 14 80 | mu | 5 0 | 0 50 | 2 50 | 52 1 |
| 8 | Proc Pen Inj | H ndustan Ant bio t cs | Pen c ll n | 15 lac IU/ml single vial | *1 30 | mu | 1 5 | 0 50 | 0 75 | 57 6 |
| 9 | Penicillin Tabs | 1 H ndustan Anti biot cs | Pen cillin | 65 mg × 12 tab | *1 75 | gm | 0 78 | 0 8) (per MU) | 0 624 | 35 6 |
| | | | | 65 mg × 36 tabs | *4 75 | gm | 2 34 | | 1 872 | 39 4 |
| | | 2 Alembic Chem cal | Pen c llin | 0 2 Mu × 12 tabs | 2 00 | mu | 2 4 | 0 50 | 1 20 | 60 0 |
| | | 3 Standard Pharmace t cals(STANPEN) | Pen c ll n | 0 2 Mu × 48 tabs | *8 60 | mu | 9 6 | 0 50 | 4 80 | 55 9 |

TABLE 25.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | Streptomycin Sulphate Inj. | Hindustan Antibiotics | Streptomycin | 1 gm/vial single vial | *0.58 | gm | 1.0 | 0.225 | 0.225 | 38.8 |
| 11 | Chloramphenicol Caps. | 1. Parke-Davis (CHLOROMYCETIN KAPSEALS) | Chloramphenicol | 250 mg/Caps 12 caps pack | *5.85 | gm | 3.0 | **0.315 | 0.945 | 16.1 |
| | | | | 250 mg. 1000 caps. | 177.00 | gm | 250.0 | **0.315 | 78.75 | 44.5 |
| | | 2. Boehringer-Knoll (CHLORAMPHYCIN) | Chloramphenicol. | 250 mg/cap 12 caps | *6.13 | gm | 3.0 | 0.410 | 1.23 | 20.0 |
| | | | | 250 mg/cap 100 caps | 19.00 | gm | 25.0 | 0.410 | 10.25 | 53.7 |
| | | | | 1000 caps | 170.00 | gm | 250.0 | 0.410 | 102.5 | 60.2 |
| 12 | Tetracycline Caps | 1. Pfizer (TETRACIN) | Tetracycline | 250 mg 4 × 25 caps | *103.02 | gm | 25.0 | 1.147 | 28.68 | 27.9 |
| | | 2. Cyanamid (ACHROMYCIN) | Tetracycline | 250 mg × 4 caps | 2.89 | gm | 1.0 | 1.147 | 1.147 | 36.4 |
| | | | | 12 × 4 caps | 31.87 | gm | 12.0 | 1.147 | 13.764 | 43.4 |
| | | | | 25 × 4 caps | 65.40 | gm | 25.0 | 1.147 | 28.68 | 43.9 |
| | | (ACHROMYCIN-V) | | 250 mg × 4 caps | 2.89 | gm | 1.0 | 1.147 | 1.147 | 30.4 |
| | | | | 12 × 4 caps | 31.87 | gm | 12.0 | 1.147 | 13.764 | 43.4 |
| | | | | 25 × 4 caps | 65.40 | gm | 25.0 | 1.147 | 28.68 | 43.9 |
| | | (ACHROMYCIN-SV) | | 250 mg × 4 caps | 3.01 | gm | 1.0 | 1.147 | 1.147 | 38.0 |
| | | | | 12 × 4 caps | 33.15 | gm | 12.0 | 1.147 | 13.764 | 41.5 |
| | | | | 25 × 4 caps | 68.66 | gm | 25.0 | 1.147 | 28.68 | 41.8 |
| 13 | Oxytetracycline Caps | Pfizer (TERRAMYCIN) | Tetracycline | 250 mg × 100 caps | *103.20 | gm | 25.0 | 1.147 | 28.63 | 27.8 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 14 | Chlortetracycline Caps. | Cyanmid (AUREO MYCIN) | Tetracycline | 250 mg × 4 caps | 2 89 gm | 1 0 | 1 147 | 1 147 | 36 4 |
| | | | | 12 × 4 caps | 31 87 gm | 12 0 | 1 147 | 13 764 | 43 4 |
| | | | | 25 × 4 caps | 65 0 gm | 25 0 | 1 147 | 28 68 | 43 9 |
| 15 | Demethyl Chlortetracycline Caps | Cyanamid (LEDERMYCIN) | Tetracycline | 150 mg × 4 caps | 3 18 gm | 0 6 | 1 147 | 0 6882 | 21 6 |
| | | | | 12 × 4 caps | 35 06 gm | 7 2 | 1 147 | 8 2584 | 23 6 |
| | | | | 25 × 4 caps | 71 94 gm | 15 0 | 1 147 | 17 00 | 23 6 |
| 16 | Amodiaquin Tabs | Parke-Davis (CAMOQUIN) | Amodiaquin | 0 2 gm × 250 tabs | *25 35 gm | 50 0 | **0 095 | 4 75 | 18 7 |
| | | | | 0 15 gm × 1000 | 45 00 gm | 150 0 | | 14 25 | 31 8 |
| 17 | Chloroquin Tabs | Bengal Immunity | Chloroquin | 0 25 gm × 100 tabs | 8 00 gm | 25 0 | 0 275 | 6 875 | 85 9 |
| | | | | 1000 tabs | 75 00 gm | 250 0 | 0 275 | 68 75 | 91 6 |
| 18 | Iodochlore hydroxyquinoline Tabs | 1 East India Pharmacutical (ENTEROQUINOL) | Iodochlorhydroxyquinoline | 250 mg × 1000 | 35 00 gm | 125 0 | **0 0596 | 7 45 | 21 3 |
| | | | | 250 mg × 500 bottle | 18 00 gm | 62 5 | **0 0596 | 3 73 | 20 4 |
| | | 2 Alembic Chemical (ALCHLOQUIN) | Iodochlorhydroxyquinoline | 250 mg × 500 tabs | 14 50 gm | 125 0 | N A | | |
| | | | | 1000 tabs | 27 00 gm | 250 0 | N A | | |
| | | 3 Bengal Chemical | Iodochlorhydroxyquinoline | 250 mg × 100 tabs | *5.10 gm | 25 0 | N A | | |
| | | | | 500 tabs | *23 60 gm | 125 0 | N A | | |
| 19 | Di iodo-hydroxy quinolin Tabs | 1 East India Pharmaceutical | Di iodo hydroxy-quinoline | 250 mg × 1000 tabs | 21 00 gm | 250 0 | **0 04498 | 11 245 | 53 5 |
| | | 2 Bengal Immunity | Di-iodo-hydrozy-quinoline | 250 mg × 500 | 14 39 gm | 125 0 | 0 08 | 10 00 | 69 8 |
| | | | | 250 mg × 1000 | 20 40 gm | 250 0 | 0 08 | 20 00 | 99 5 |
| 20 | Chlorpropamide Tabs | Pfizer (DIABANESE) | Chlorpropamide | 100 mg × 100 tabs | 16 30 gm | 10 0 | **0 107 | 1 07 | 6 6 |
| | | | | 250 mg × 100 tabs | 35 14 gm | 25 0 | **0 107 | 2 675 | 7 6 |

TABLE 25.1—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| 21 | Tolbutamide Tabs | Hoechst (RASTI-NON) | Tolbutamide | 500 mg | | | | | | |
| | | | | 100 × 10 tabs | 10.00 | gm | 50.0 | 0.07 | 3.50 | 35.0 |
| | | | | 1000 tabs | 100.00 | gm | 500.0 | 0.07 | 35.00 | 35.0 |
| | | Unichem (UNITO-LBID | Tolbutamide | 580 mg × 100 tabs | 15.70 | gm | 58.0 | 0.08 | 4.64 | 29.6 |
| | | | | 500 tabs | *73.50 | gm | 290.0 | 0.08 | 23.20 | 31.6 |
| 22 | Insulin Inj. . | Boots | Insulin | 10 U/ml 10 ml vial | *4.22 | MU | 0.0004 | 4200 | 1.68 | 39.9 |
| | | | | 80 U/ml 10 ml vial | *8.15 | MU | 0.0008 | 4200 | 3.36 | 41.2 |
| 23 | Insulin Zinc Susp. Inj. | Boots | Insulin | 40 U/ml 10 ml vial | *6.18 | MU | 0.0004 | 4200 | 1.68 | 27.2 |
| 24 | Insulin Protamine Zinc Inj. | Boots | Insulin | 40 U/ml 10 ml vial | *0.06 | MU | 0.0004 | 4200 | 1.68 | 33.2 |
| 25 | Insulin Isophane Inj. | Boots | Insulin | 40 U/ml 10 ml vial | 7.31 | MU | 0.0004 | 4200 | 1.68 | 23.0 |
| 26 | I.N.H. Tabs . | 1. Pfizer (ISONEX) | I.N.H. | 30 mg × 1000 tabs | *13.38 | gm | 50.0 | **0.0935 | 4.675 | 35.5 |
| | | | | 100 mg × 100 tabs | *3.26 | gm | 10.0 | **0.0935 | 0.935 | 28. |
| | | | | 100 mg × 100 tabs | *22.69 | gm | 100.0 | **0.0935 | 9.35 | 41.2 |
| | | 2. Biological Evans | I.N.H. | 50 mg × 100 tabs | *1.50 | gm | 5.0 | 0.08 | 0.40 | 26.6 |
| | | | | 50 mg × 1000 tabs | *11.00 | gm | 50.0 | 0.08 | 4.00 | 36.4 |
| | | | | 100 mg × 100 tabs | *2.30 | gm | 10.0 | 0.08 | 0.80 | 34.8 |
| | | | | 100 mg × 1000 tabs | 12.00 | gm | 100.0 | 0.08 | 8.00 | 66.7 |
| | | | | 100 mg × 5000 tabs | 58.00 | gm | 500.0 | 0.08 | 10.00 | 67.9 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 3 Bengal Immunity | I N H | 50 mg × 100 tabs | 1 13 | gm | 5 0 | 0 10 | 0 50 | 44 3 |
| | | | 50 mg × 1000 tabs | 6 80 | gm | 50 0 | 0 10 | 5 00 | 73 5 |
| | | | 100 mg × 100 tabs | 1 67 | gm | 10 0 | 0 10 | 1 00 | 59 9 |
| | | | 100 mg × 1000 tabs | 11 90 | gm | 100 0 | 0 10 | 10 00 | 84 0 |
| | 4 Bengal Chemical | I N H | 50 mg × 1000 | *10 20 | gm | 50 0 | 0 12 | 6 00 | 58 7 |
| | 5 Chemo-Pharma | I N H | 50 mg × 100 tabs | *2 20 | gm | 5 0 | 0 095 | 0 475 | 21 6 |
| | | | 50 mg × 1000 tabs | *15 24 | gm | 50 0 | 0 095 | 4 75 | 31 2 |
| | | | 100 mg × 100 tabs | *3 30 | gm | 10 0 | 0 095 | 0 95 | 28 8 |
| | | | 100 mg × 1000 tabs | *24 36 | gm | 100 0 | 0 095 | 9 50 | 39 1 |
| 27 P A S Granules | 1. Pfizer | P A S | (70%) 100 gm pack | *5 60 | gm | 100 0 | **0 039 | 3 90 | 60 7 |
| | | | 100 gm pack | *51 06 | gm | 1000 0 | **0 039 | 39 00 | 71 4 |
| | 2 Biological Evans | P A S | (65%) 100 gm pack | *4 00 | gm | 100 0 | 0 032 | 3 20 | 80 0 |
| | | | 1000 gm pack | *35 00 | gm | 1000 0 | 0 032 | 32 00 | 91 5 |
| 28 Prednisolone Tabs | 1 Merck Sharp (CODELCORTONE) | Prednisolone | 5 mg × 100 tabs | 20 11 | gm | 0 5 | 16 00 | 8 00 | 39 8 |
| | | | 5 mg × 1000 tabs | 181 40 | gm | 5 0 | 16 00 | 80 00 | 44 2 |
| | 2 Wyeth Labs (WYSOLONE) | Prednisolone | 5 mg × 100 tabs | *21 41 | gm | 0 5 | 17 00 | 8 50 | 39 7 |
| | | | 500 tabs | *60 00 | gm | 2 5 | 17 00 | 42 50 | 70 8 |
| | 3 Glaxo Labs (DELTACORTIN) | Prednisolone | 5 mg × 10 tabs | 2 06 | gm | 0 05 | 25 00 | 1 25 | 60 6 |
| | | | 100 mg × 10 tabs | 18 59 | gm | 0 5 | 25 00 | 12 50 | 67 3 |
| | | | 1000 mg × 10 tabs | 172 00 | gm | 5 0 | 25 00 | 125 00 | 73 6 |

* In these cases Government prices for formulations are not available Wholesale prices have been adopted

** In these cases the rates for basic drug are the ex works costs per the drug as ascertained by the Commission's Cost Accounts Officers

25.2 The analysis of the ratio between the formulation price and that of the basic drug shows that the value of the basic drug generally constitutes a very small fraction of the total cost of the formulation, and that any monopoly of the basic drug is not likely to be a factor in the ultimate price of the formulation. There is enough room for competition and economics in cost above the stage of basic drug.

25.3. The disparity between prices of bulk drugs used in certain formulations and the prices of formulations containing the same amount of drug is so self-evident that it may appear surprising that this item should have been included for the Tariff Commission inquiry. In none of the instances quoted which have been adopted from a very large number of items, is there any correspondence or near parity between the price of the formulation as sold to the Government and the price of the drug contained in the formulation as sold to other formulators. However, a solitary instance has been brought to our notice. In this case the rates quoted and accepted under Employee's States Insurance Scheme for the period 1968-69 under Schedule 2 Group 9 page 10 serial 69 of the tender Prednisolone tablets of 5 mg. each in packings of 1000 tablets have been tendered at Rs. 71/- including sales tax of 3 per cent by Geoffery Manners which is the sister concern of Wyeth Laboratories Ltd. the manufacturers of Prednisolone in India. On the other hand the rate for powder Prednisolone in bulk is Rs. 16.50 per gramme excluding sales tax at 3 per cent.

The quantity needed for 1000 tablets of 5 million grammes each would theoretically be valued at Rs. 82/50. Adding to this the amount of sales tax at 3 per cent it works out to Rs. 2.47, the total would come to Rs. 84.97. Over and above the amount of Rs. 84.97 the formulator would need to make additional outlays in the form of wastages in the process of manufacture, cost of conversion, packing costs and dealers' commission. The price of prednisolone at which we have arrived is Rs. 59.73 including return for 5 grammes and the price of formulation of 5 mg. tablets in packing of 1000 tablets containing the same quantity of the basic drug works out to Rs. 85 for the unit with the lowest price. The same formulation is sold at Rs. 60 for 500 tablets by Wyeth Labs. at Rs. 181 for 1000 tablets by Merck Sharp and for Rs. 172 for 1000 tablets by Glaxo Labs. It appears therefore that in this particular instance the rate quoted to the Government was abnormally low. This is however the only instance

... the ... which the bulk drug as supplied to formulators [illegible]

that there may be such other instances too but notwithstanding the fact that we publicised the terms of reference and invited *evidence from all parties concerned, no other example was brought* to our notice.

CHAPTER 26

# INCIDENCE OF DISCOUNT OR COMMISSION TO THE STOCKISTS, DEALERS, RETAILERS AND THE MARGIN OF PROFITS FOR EACH

26.1. The rates of margin allowed to stockists and dealers vary from unit to unit and the total margin allowed to intermediaries including the retailer between ex-factory cost of the drug and the cost to the consumer varies from 9 per cent to 50 per cent in the case of basic drugs and from 4.5 per cent to 66.7 per cent in the case of formulations. The selling system adopted by the different manufacturers has already been discussed in Chapter 22. The range of the margin that is allowed to wholesalers and distributors by the various units is as given in Table 26.1 :—

TABLE 26.1

*Margins allowed to stockists, wholesalers and retailers*

| Sl. No. | Name of the unit | Sales arrangement whether through stockists, wholesalers or agents | Margin allowed on list price to | | | Total margin between the *ex*-factory price and the maximum retail price as percentage of *ex*-factory price |
|---|---|---|---|---|---|---|
| | | | Stockists (%) | Wholesailers (%) | Retailers (%) | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | *Alembic Chemical* | | | | | |
| | (a) Basic drugs . . | Selling directly to the manufacturers. | | Not applicable | | |
| | (b) Formulations . . | Through Stockists . . | 14·6 | 2½ to 5 | 10 to 20 | 39·6 |

| | | | | | |
|---|---|---|---|---|---|
| *Bengal Chemical* | | | | | |
| (a) Basic drugs | Products are distributed *through* their offices in Calcutta Bombay Kanpur and Delhi Besides they have other distributors | No discount is allowed to the customers 12½% commission is allowed to the distributors on their total transactions | | | |
| (b) Formulations . | | | | | 34 |
| *Bengal Immunity* | | | | | |
| (a) Basic drugs | Selling directly to the wholesalers | | | | |
| (b) Formulations | Discount depends on volume of purchase | .. | 3 to 7 | 3 to 7 | 14 |
| *Boehringer Knoll* | | | | | |
| (a) Basic drugs | Sales to the manufacturers at *ex* factory price No intermediaries | Not applicable | | | |
| (b) Formulations | Through sole distributor | 12 | 15 | | 37 to 40 |
| 5 *Boots* | | | | | |
| (a) Basic drugs | Through distributors who | are allowed a discount of 29% of the retail price, of which 20% is passed on to the trade | | | |
| (b) Formulations . | | 9 | 8 | 12 | 29 |
| 6 *Chemo Pharma* | | | | | |
| (a) Basic drugs | Sales are managed departmentally from the head office | Not applicable (Basic drugs are sold only to viallers and other manufacturers) | | | |
| (b) Formulations | | 15 | 10 | 5 | 25 |

TABLE 26.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 7 | *Cyanamid* | | | | | |
| | (a) Basic drugs . . | No discount. Sold exclusively to formulators. | Not applicable | | | |
| | (b) Formulations . . | Through distributors | 8 | 20 | 11 | 39 |
| 8 | East India Pharmaceuticals | Do not have any scheme of discounts as such. However, have a scheme of bonus and commission depending on the volume of business. | | | | |
| 9 | *Glaxo Labs.* | | | | | |
| | (a) Basic drugs . . | Sales direct to manufacturers. | .. | | | |
| | (b) Formulations . . | Sales are made from the Branches/Depots to any dealer. | .. | 5 to 10 | 10 | |
| 10 | *Haffkine* | | | | | |
| | (a) Basic drugs . . | No Sales | Not applicable | | | |
| 11 | *Hind Chemicals* | | | | | |
| | Formulations . . | — | .. | 20 | 20 | 6·9 |
| 12 | *Hindustan Antibiotics* | | | | | |
| | (a) Basic drugs . . | Sales are managed departmentally from the Head Office. | .. | (65% of the total production sold directly to manufacturers) | | |

| | | | | | |
|---|---|---|---|---|---|
| (b) Formulations . | . Through distributors | — | 10 | 5 | 15 |
| 13 *Hoechst* | | | | | |
| (a) Basic drugs . | . Sale directly to the formulators | Not applicable | | | |
| (b) Formulations | Through distributors | — | 6 to 7 | 9 to 17 | 37 to 50 |
| 14 *May and Baker* | | | | | |
| (a) Basic Drugs . | . Only 0 2% of sulphadiazine produced in 1966 sold to other pharmaceutical firms. | (Sales negligible) | | | |
| (b) Formulations . | . Special discounts are affected to | (1) Preferred stockists (2½% to 5%) and (2) Local stockists (4%) depending on the quantum of their business | | | |
| 15 *Merck-Sharp* | | | | | |
| (a) Basic drugs . | Through Voltas who are the sole distributors | 20 | — | .. | 9 2 to 46 7 |
| (b) Formulations . | . Through Voltas who are the sole distributors | 7½ to 17 | — | 10 to 20 | 20 |
| 16 *Parke-Davis* | | | | | |
| (a) Basic drugs<br>(b) Formulators | . Through distributors | — | 10 | 25 | 19 4 to 62 5 (10% goes to the remaining intermediaries) |

TABLE 26.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 17 | *Roche Products* | | .. 7½ | 13 | 20 | 50 |
| | Basic drugs (Synthetic Vit.-A) | Voltas are their exclusive distributors in India. | | | | |
| 18 | *Sarabhai Merck* | | | Not applicable | | |
| | Basic drugs | Major portion sold to all manufacturers directly. | | | | |
| 19 | *Synbiotics* | | | | | |
| | Basic drugs | 75% sold to M/s. Sarabhai Chemicals. The rest through Sarabhai Merck to the market. | — | — | — | 3 (to Sarabhai Merck.) |
| 20 | *Wander Pharmed* | | | 8 | — | 8 |
| | (a) Basic drugs | | .. | — | — | .. |
| | (b) Formulations | Through sole distributor | 5 | | | |
| 21 | *Wyeth Labs.* | | | 5 to 10 | .. | .. |
| | (a) Basic drugs | Through wholesalers | .. | | 20 | 25 |
| | (b) Formulations | Geoffrey Manners sole distributors | .. | 5 | | |
| 22 | Dr. Karanth's Pharmaceuticals Industry Isniazid B.P. | | .. | .. | 29 | 20 to 40 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23 | Neogy Labs. | No discount is allowed at present. Concessional prices given according to the merit of the consumers or dealers regarding payment. | .. | | — | |
| 24 | Anglo French | Through stockists | — 10 | — | 17½ | 15 to 43 |
| 25 | Bayer | Through distributor | — 7 | — | 14 | 21 |
| 26 | British Drug House | Through Distributor | 7½ to 10 | — | 20 | 30 |
| 27 | Burroughs Wellcome | Through Distributors and Stockists | 5 to 7½ (for Insulin) 10 (for others) | — | 20 | 33·7 to 42·9 |
| 28 | Ciba | Through regional Distributors | 7½ to 12½ | — | 20 | 27½ |
| 29 | Dey's Medical | Through exclusive Distributor | 16 to 23 | — | — | .. |
| 30 | Geoffrey Manners | | — | 10 to 20 | 10 to 20 | 11·1 to 24 9 |
| 31 | Laboratories Grimault | Through sole selling agents | 11 | 9 | 15 | 47 |
| 32 | Martin & Harris | | — | 5 | — | 8·5 to 37 6 |
| 33 | Neo Pharma | Through Distributors | — | 12½ | 15 | 27½ |
| 34 | Smith Stanistreet | Through wholesalers | — | 1 | 13 to 19 | 30·4 to 42·2 |

TABLE 26.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 35 | South India Res. Inst. | Through wholesalers | — | 7½ | 7½ | 11·5 to 15·4 |
| 36 | Standard Pharmaceuticals. | Through authorised Distributors | 20% trade discount 5% special discount and 10% Commission to the distributor | .. | 20 % trade discount and 5% special discount | 25 |
| 37 | Unichem Labs. | Through M/s. Uni-Distributors Pvt. Ltd., who appoints stockists and sub-stockists. | — | 5 | 8 to 11 | 28 to 38 |
| 38 | Zandu | Chief Stockist in Bombay @10% discount | 10 (5% for Antibiotics) | — | — | 19·9 to 50·9 |
| 39 | AMAVA | — | — | 10 | 15 | 25 |
| 40 | Beacon | — | — | 10 | 18 | 28 to 48 |
| 41 | Binichem | — | — | Selling at common market rate. | — | 20 to 43 |
| 42 | Bronkol | — | — | Nil | Nil | 6·3 to 15.8 |
| 43 | Eisen Pharmaceutical | — | — | 15 | 15 | 68 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 44 | Flora Pharma | .. | — | 10 to 15 | 10 to 15 | 42 to 83 |
| 45 | Gurco Pharma | Through distributors | .. | 5 to 45 (5% to 6½% for Chloramphenicol and Tetracycline and Vit C formulation 25% for Vit B12 and B12 (b) formulations 45% for others) | Nil | 6·5 to 33·3 |
| 46 | Imperial Pharmaceutical | Discount depends on the value of sales. | — | 8 | — | — |
| 47 | Lyka Labs | Through distributors | — | 8 | 19 to 31 | 27 8 to 55·6 |
| 48 | Milnex Labs. | Through stockists | 5 to 10 | .. | 9·3 to 17·5 | 14·3 to 27 5 |
| 49 | Orissa Red Cross | .. | .. | Nil | Nil | .. |
| 50 | Pharma Medico | . | .. | 10 | 25 to 30 | 57·8 to 66·7 |
| 51 | Pharmaceuticals & Research Labs | Through distributors | 10 to 25 | .. | 15 | 25 6 to 28·2 |
| 52 | Pharmakon Labs | .. | .. | 7½ to 10 | 15 | 22½ |
| 53 | Royal Labs | .. | .. | 5 | 20 | 4 5 to 20 |
| 54 | Roc Pharmaceuticals | Through wholesalers | .. | 3 to 7½ | 10 to 15 | 13 4 to 25·6 |
| 55 | Fairdeal Corpn | Through wholesalers | . | 7½ to 10 | 20 to 25 | 23 4 to 33 3 |
| 56 | Lyovak Labs | Through authorised distributors and stockists | . | 2½ to 25 | 20 | 32 |

26.2. We have reliably been informed that notwithstanding the higher margins permitted to retailers by the manufacturers in a number of cases the Retailers Association in Bombay has come to an informal understanding that in the case of a large number of items of formulations the maximum margins that would be charged by them will be only 10 per cent. This clearly indicates that in so far as Bombay city is concerned the amount of 10 per cent is not unremunerative. It is however possible that in outlying areas this margin may be incommensurate with the needs of the retailers where expenses to be incurred may be higher and turnover of the stocks may need a higher margin.

26.3. We have been informed that margins available to dealers are from 50 to 60 per cent in the case of about 25 per cent of the total turnover of the drugs, about 40 per cent for 15 per cent of the turnover and for the remaining 60 per cent of the turnover the range of margin is only from 5 to 15 per cent cent. These latter with low range of margin are mostly household remedies which sell on the counter. In other countries it is said the dealers' margins vary from 25 to 40 per cent. In U. K. wholesalers' discount is approximately 15 per cent and in the U.S.A. about 20 per cent. In Germany it is 25 per cent, in U.K. and Middle East countries 33 per cent and in U.S.A. 40 per cent. It was represented to us by the All India Retail Chemists Association that there is need to fix a higher margin for the retailer in view of the risks and expenditure involved. The dealers have to employ qualified pharmacists, have to maintain a multiplicity of records and are always faced with the risk of not selling certain drugs since their sales are dependent upon the prescription of doctors and not on any consumer choice. To a pointed question with regard to the incidence of time expired stocks the loss of which the retailers have to bear we were informed that it works out to from 2 to 2½ per cent on annual turnover. The All-India Retail Chemists' Association has advocated a uniform pattern of distribution ensuring proper margin for everyone. The retailers have, in addition to employing qualified staff as required under the provisions of the Act, to arrange for proper storing facilities, refrigeration, keep salesmen who are well-educated and well-mannered and to make investment on stocks of drugs the demand for which cannot easily be foreseen, to face losses resulting from products which are discontinued or are replaced by newer items. In some cases they have to offer night dispensing services and have to make available every drug in the farthest corners of the country even if the demand for the drug is seasonal. It has been represented that the chemist cannot clear all his stock by offering it at reduced price or by organising a sale. They have advocated a uniform margin of

25 per cent of the consumers' prices and have urged that the consumers' prices may be fixed as a norm and the margins worked [illegible]

26.4 We have very carefully considered the various points raised and have come to the conclusion that the following rates of commission would be equitable :—

*Mark-up*.—The Development Council for the Drugs and Pharmaceuticals Industry had attempted to evolve a suitable mark-up and to establish a norm for conversion charges. It was found not practicable for them to specify the items which should form either a conversion charge or the mark-up. In view of the difficulties experienced by them, and as the accounting methods considerably differed from unit to unit, the Commission decided that in order to provide an element of return to the formulator a mark-up of 15 per cent over the cost of sales would be sufficient. This has been provided.

*Margin*.—The drugs have been distinguished under two categories *viz*., (i) ethical and (ii) non-ethical drugs. In ethical drugs are included such items which are pharmacopoeial items and normally administered under medical advice. The range of commission for ethical drugs was decided at 25 per cent *i.e.*, 15 per cent to the retailer and 10 per cent to other intermediaries. In the case of non-ethical drugs the range of commission was, however, decided at 15 per cent, *i.e.*, 10 per cent for the retailer and 5 per cent for other intermediaries. Formulations of the 18 specified basic drugs are classified as follows under prescription and non-prescription drugs.

| Prescription Drugs | Non Prescription Drugs |
|---|---|
| 1 | 2 |
| 1 Sulphadiazine | 1 Vitamin 'A' |
| 2 Prednisolone | 2 Vitamin 'B-12' |
| 3 Penicilln | 3 Vitamin 'C' |
| 4 Tetracyclines | 4 Chloroquin |
| 5 Streptomycin | 5 Amodiaquin |

| 1 | 2 |
|---|---|
| 6. Chloramphenicol | 6. (a) Iodo-chlor-hydroxy quinoline |
| | (b) Di-iodo-hydroxyquinoline |
| 7. I.N.H. | 7. Tolbutamide |
| 8. P.A.S. | 8. Insulin |
| | 9. Tetanus Anti-toxin |
| | 10. Chlorpropamide |

We have allowed the respective rates of commission to arrive at the net retailers' prices, which takes into account all amounts payable in the shape of discounts, agency charges etc.

## CHAPTER 27

## ANALYSIS OF BALANCE SHEETS

**27 1 Reserve Bank of India's Study :**

27 1 1 The following are some of the findings on the basis of the study of profit margins of the drugs and pharmaceuticals industry by the Reserve Bank of India published in its Bulletin for December 1967

(i) The ratios of gross profits to sales were much higher (14 0 per cent in 1960 61 and 16 5 per cent in 1965 66) in the pharmaceuticals industry during the period, when compared to the 23 companies under the other chemical products and the 1333 public limited and 501 private limited companies The 36 companies of Basic Industrial chemicals only showed a slightly higher ratios in this ragard than the pharmaceuticals group The ratios of gross profits to total capital employed for the industry were also much higher than for the other four sectors Gross profits of the industry as percentage of total capital employed also steadily rose from 14 0 per cent in 1960 61 to 17 2 per cent in 1965 66

(ii) The ratios of profits after tax in relation to net worth were also much higher for the pharmaceuticals group than for the other sectors The Drugs industry, indeed, seems to have declared good dividends judged from the ratios of ordinary dividends to ordinary paid-up capital and total dividends as percentage of total paid-up capital which were much higher as compared to those of the other sectors

(iii) However, the tax provision made out of profits before tax which was about 45 per cent for the industry in 1960 61 went up to 60 per cent in 1965 66 under the sample During the same period the corresponding rates for the 1333 public limited companies showed a relative increase from 39 per cent in 1960 61 to 51 per cent in 1965 66, while in the case of the 501 private limited companies, the range of increase was from 46 to 66 per cent

(iv) The dividends declared by the pharmaceuticals group after tax were generally more than 56 per cent during the years under study (except for 1961-62 when it was 51 per cent). The other sectors also indicate a similar higher rates in this regard during the period.

(v) Above all, the ratios of profits ratained (that is profits available for plough back as percentage of profits after tax) in the case of the drugs and pharmaceutical industry were always higher than those of the 1333 public limited companies as well as the 501 private limited companies under study.

27.1.2. According to this study the structure of assets of the pharmaceuticals industry in the year 1965-66 as compared to that of the basic industrial chemicals, other chemical products and the entire industrial sector, shows the following picture :

(a) The net fixed assets formed a little less than one-third of the total assests of the pharmaceuticals industry while it was more than one third for the entire industrial sector.

(b) The proportion of the finished goods to the total assets was slightly higher (16.2 per cent) in the case of the pharmaceuticals industry than in the other two sectors as well as the entire industrial sector.

(c) The ratio of inventories of raw materials to net fixed assets was about 1:7 for basic industrial chemicals, about 1 : 2 for chemical products, and about 1 : 3 for the pharmaceuticals industry and 1 : 4 for the entire industrial sector. This shows that the pharmaceuticals industry was much less fixed-capital intensive than the basic industrial chemicals, but slightly more fixed-capital intensive than the chemical products industry.

(d) Inventories were less than half of the fixed assests in the case of the basic industrial chemicals, and nearly one and a half times the fixed assets in the case of the chemical products while they were equal to the fixed assets in the case of the pharmaceuticals industry.

(e) Loans and advances etc. and cash and bank balances formed a relatively higher proportion of the total assets of the pharmaceuctical industry than in the case of the basic industrial chemicals but less than that of the chemical products industry.

27 1 3 The pattern of liabilities of the pharmaceuticals industry *in comparison with the other three sectors shows the following* features

(a) Reserves and surplus formed a higher percentage (19 5%) for the pharmaceuticals industry than in the case of the basic industrial chemicals (16%), other chemical products (16 8%) and the entire industrial sector (18 6%)

(b) The proportion of the provisions to the total liabilities was 18 1 per cent for the pharmaceuticals industry, while it was much lower for all the other companies (9 9%)

(c) Borrowings formed nearly one fourth of the total liabilities of the pharmaceuticals industry, while it was around one third for the two other sectors (*viz Basic chemicals and all public limited companies*) covered by the Reserve Bank Study

27 1A We would like to invite attention to another study of the balance sheets of a sample of 88 pharmaceutical companies registered in *Maharashtra made by Hazari and Lakhani* (Economic and Political Weekly, Vol II No 26, July 1 1967) It includes 11 of the 34 units costed by us—4 wholly foreign, 6 foreign majority and 1 Indian majority Its relevant conclusions are

1 "*Retained profits have become more important* as a source of finance between 1958 and 1964 and the proportion of fixed to total assets has risen consistently During this period only about one half of gross total funds raised were, however, fixed investment and working capital absorbed the balance'

2 'In 1964, 47 companies (excluding those wholly Indian owned with accumulated losses) were earning after tax 24 per cent on net worth and 10 per cent on sales The wholly foreign owned companies were earning a cash profit (profit after tax before depreciation) which would fetch their investment back within two years The foreign majority companies were taking a little more than four years to do so The profitability of this sample compares favourably with that of companies in the Reserve Bank samples of public and private companies"

**27.2. Our study :**

27.2.1. Since the Reserve Bank Study covered only public limited companies, an attempt was made by us to analyse the working results of 34 companies in the Drugs and pharmaceuticals group including both public limited and private limited companies situated in the different parts of the country. 25 of these are major costed units and nine others are leading units of the industry. This sample includes 14 companies out of 32 public limited companies covered by the Reserve Bank Study as in 1966. Twenty-four of the 34 selected companies are public limited (of which one—Hindustan Antibiotics is a public sector concern), 9 are private limited companies and the remaining one (Haffkine Institute) is a State Government undertaking. As regards the ownership and control of these 34 companies, the position was that five companies were wholly foreign, eight were with foreign majority shares; two companies were with 50% Indian and 50% foreign share holdings, four companies were with foreign minority and Indian majority share-holdings and 15 companies were wholly Indian. The 34 companies selected for our study cover about 65 per cent of the total sales of the entire pharmaceuticals industry (*i.e.* Rs. 113 crores out of Rs. 175 crores in 1965-66 respectively) as against 25 to 30 per cent of sales turnover of the industry covered by the Reserve Bank's sample of 32 public limited companies for the year 1965-66. Brief particulars of these units are as given in Table 27.1 :

TABLE 27.1

*Net assets, working capital and sales for some major units*

(Amounts in Rs. lakhs)

| Sl. No. | Name of the Company | Year | Net assets | Working capital | Total sales |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Glaxo Laboratories (India) P. Ltd. | 1963-64 | 438 | 569 | 1268 |
| | | 1964-65 | 431 | 600 | 1331 |
| | (Financial Year : July-June) | 1965-66 | 431 | 520 | 1438 |
| 2 | Boots Pure Drug Co. (India) Ltd. | 1964 | 44 | 46 | 194 |
| | (Fin. year : Jan.-Dec.) | 1965 | 48 | 81 | 201 |
| | | 1966 | 48 | 64 | 218 |

TABLE 27.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 3 | British Drug House (India) P. Ltd. (Fin Year : Jan-Dec) | 1964 | 60 | 48 | 183 |
| | | 1965 | 59 | 46 | 207 |
| | | 1966 | 77 | 40 | 217 |
| 4 | Burroughs Wellcome & Co P. Ltd (Fin year Sept-Aug) | 1963-64 | 32 | 9 | 107 |
| | | 1964-65 | 34 | 19 | 125 |
| | | 1965-66 | 30 | 59 | 145 |
| 5 | May & Baker Ltd . . . . (Fin year : Apri -Mar) | 1963-64 | 115 | 217 | 253 |
| | | 1964-65 | 134 | 167 | 294 |
| | | 1965 66 | 131 | 156 | 334 |
| 6 | Franco-Indian Mfrs P Ltd . (Fin year : April-Mar) | 1963-64 | 5 | 3 | 38 |
| | | 1964-65 | 5 | 8 | 45 |
| | | 1965-66 | 6 | 9 | 60 |
| 7 | Pfizer Ltd . . . . . (Fin year : Dec-Nov) | 1963 64 | 94 | 346 | 911 |
| | | 1964-65 | 131 | 539 | 1087 |
| | | 1965-66 | 150 | 487 | 1270 |
| 8 | Merck Sharp & Dohme of India Ltd. (Fin year : Dec-Nov) | 1963 64 | 163 | 37 | 206 |
| | | 1964-65 | 153 | 65 | 262 |
| | | 1965-66 | 147 | 76 | 313 |
| 9 | Parke Davis (India) Ltd. . . (Fin year : Dec Nov) . . | 1963 64 | 94 | 215 | 389 |
| | | 1964 65 | 87 | 285 | 457 |
| | | 1965 66 | 81 | 296 | 527 |
| 10 | Cyanamid India Ltd . . (Fin year : Dec-Nov) . . | 1963-64 | 102 | 147 | 366 |
| | | 1964-65 | 92 | 163 | 412 |
| | | 1965 66 | 79 | 182 | 504 |
| 11 | Wyeth Laboratories Ltd . . (Fin year . Nov Oct) . . | 1963 64 | 99 | 48 | 40 |
| | | 1964-65 | 89 | 67 | 92 |
| | | 1965 66 | 78 | 72 | 123 |
| 12 | Bayer (India) Ltd . . . . (Fin year : April-March upto 1964-65 Now Jan-Dec) | 1963 64 | 20 | 55 | 85 |
| | | 1964-65 | 26 | 255 | 104 |
| | | 1966 | 35 | 160 | 125 |
| 13 | Roche Products Ltd . . . . (Fin year : Jan-Dec) | 1964 | 145 | 130 | 284 |
| | | 1965 | 145 | 131 | 283 |
| | | 1966 | 134 | 167 | 331 |

TABLE 27.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 14 | Boehringer-Knoll Ltd. (Fin. year : May-April) | 1963-64 | 59 | 32 | 85 |
| | | 1964-65 | 58 | 49 | 93 |
| | | 1965-66 | 55 | 56 | 155 |
| 15 | Crookes Interfran Ltd. (Fin. year : July-June) | 1963-64 | 24 | 20 | 67 |
| | | 1964-65 | 30 | 24 | 79 |
| | | 1965-66* | 41 | 46 | 156 |
| 16 | Hoechst Pharmaceuticals Ltd. (Fin. year : Jan.-Dec.) | 1964 | 70 | 139 | 300 |
| | | 1965 | 83 | 138 | 423 |
| | | 1966 | 137 | 265 | 491 |
| 17 | Synbiotics Ltd. (Fin. year : April-March) | 1963-64 | 151 | 43 | 72 |
| | | 1964-65 | 128 | 81 | 169 |
| | | 1965-66 | 154 | 92 | 222 |
| 18 | Sarabhai Chemicals (Fin. year : April-March) | 1963-64 | 78 | 520 | 879 |
| | | 1964-65 | 78 | 519 | 964 |
| | | 1965-66 | 90 | 584 | 1160 |
| 19 | Alembic Chemical Works Co. Ltd. (Fin. year : Jan.-Dec.) | 1964 | 240 | 146 | 542 |
| | | 1965 | 247 | 171 | 632 |
| | | 1966 | 262 | 223 | 627 |
| 20 | Bengal Chemical & Pharmaceutical Works Ltd. (Fin. year : April-March) | 1963-64 | 78 | 71 | 235 |
| | | 1964-65 | 87 | 72 | 245 |
| | | 1965-66 | 87 | 87 | 269 |
| 21 | Sarabhai Merck Ltd. (Fin. year : April-March) | 1963-64 | 72 | 60 | 74 |
| | | 1964-65 | 67 | 85 | 172 |
| | | 1965-66 | 69 | 93 | 215 |
| 22 | Biological Evans Ltd (Fin. year : Jan.-Dec.) | 1964 | 28 | 27 | 74 |
| | | 1965 | 30 | 45 | 93 |
| | | 1966 | 30 | 49 | 121 |
| 23 | Standard Pharmaceuticals Ltd. (Fin. year : April-March) | 1963-64 | 40 | 48 | 129 |
| | | 1964-65 | 49 | 65 | 152 |
| | | 1965-66 | 51 | 63 | 182 |
| 24 | Unichem Laboratories Ltd. (Fin. year : Oct.-Sept.) | 1963-64 | 36 | 46 | 157 |
| | | 1964-65 | 36 | 58 | 174 |
| | | 1965-66 | 40 | 70 | 220 |

[*For 18 months July, 65 to December, 66.]

TABLE 27.1—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 25 | Dey's Medical Stores (Mfg ) Pvt Ltd (Fin year · Jan -Dec ) | 1964 | 60 | 15 | 324 |
| | | 1965 | 73 | 31 | 413 |
| | | 1966 | 73 | 52 | 431 |
| 26 | Bengal Immunity Co Ltd (Fin year · May-April) | 1963-64 | 38 | 31 | 203 |
| | | 1964-65 | 40 | 35 | 219 |
| | | 1965-66 | 42 | 31 | 224 |
| 27 | East India Pharmaceutical Works Ltd (Fin year Jan -Dec ) | 1964 | 31 | 16 | 204 |
| | | 1965 | 33 | 19 | 237 |
| | | 1966 | 38 | 19 | 263 |
| 28 | Chemical Industrial & Pharmaceutical Laboratories Ltd (Fin year Nov -Oct ) | 1963-64 | 20 | 35 | 64 |
| | | 1964-65 | 20 | 34 | 80 |
| | | 1965-66 | 23 | 36 | 86 |
| 29 | Neo Pharma Pvt Ltd (Fin year Jan -Dec ) | 1964 | 6 | 26 | 115 |
| | | 1965 | 6 | 35 | 108 |
| | | 1966 | 6 | 37 | 120 |
| 30 | Chemo-Pharma Laboratories Ltd (Fin year · Jan -Dec ) | 1964 | 14 | 22 | 60 |
| | | 1965 | 21 | 29 | 65 |
| | | 1966 | 26 | 24 | 69 |
| 31 | Mac Laboratories Pvt Ltd (Fin year . April March) | 1963-64 | 16 | 4 | 34 |
| | | 1964-65 | 17 | 5 | 34 |
| | | 1965-66 | 19 | 7 | 41 |
| 32 | Bio-chemical & Synthetic Products Ltd (Fin year : Jan -Dec ) | 1964 | 15 | 2 | 6 |
| | | 1965 | 15 | 3 | 6 |
| | | 1966 | 15 | 3 | 7 |
| 33 | Hindustan Antibiotics Ltd (Govt of India concern) (Fin year April-March) | 1963-64 | 357 | 279 | 447 |
| | | 1964-65 | 333 | 281 | 383 |
| | | 1965-66 | 351 | 355 | 539 |
| 34 | Haffkine Institute (Govt of Maharashtra concern) (Fin year · April-March) | 1963 64 | 89 | 44 | 89 |
| | | 1964-65 | 96 | 52 | 88 |
| | | 1965-66 | 108 | 54 | 78 |
| | TOTAL . . | 1963-64 | 2933 | 3496 | 8484 |
| | | 1964-65 | 2981 | 4257 | 9729 |
| | | 1965-66 | 3144 | 4534 | 11281 |

NOTE.— 1 In computing *net assets*, capital work-in-progress has been excluded

2 Working capital=Current Assets *less* current liabilities
*Current assets* do not include loans and advances
*Current liabilities* do not include provisions

27.2.2. The following Tables give the net fixed assets and working capital for the manufacturers, the formulators and the manufacturers-*cum*-formulators of the eighteen basic drugs specified. The figures in brackets indicate the percentages to the total fixed assets or working capital, as the case may be, of the 34 selected companies.

TABLE 27.2

*Break-up of net fixed assets of 34 companies*

(In Rs. Lakhs)

| Category | No. of companies | 1963-64 | 1964-65 | 1965-66 | Percentage increase in 1965-66 over 1963-64 |
|---|---|---|---|---|---|
| (A) Manufacturers of specified drugs. | 3 | 238 (8·1) | 210 (7·0) | 238 (7·6) | .. |
| (B) Manufacturers-*cum*-formulators | 23 | 2450 (83·5) | 2513 (84·3) | 2598 (82·6) | 6·0 |
| (C) Formulators of specified drugs | 8 | 245 (8 4) | 258 (8·7) | 307 (9·8) | 25·3 |
| All companies . | 34 | 2933 (100) | 2981 (100) | 3143 (100) | 7·2 |

TABLE 27.3

*Break-up of working capital of 34 companies*

(In Rs. Lakhs)

| Category | No. of companies | 1963-64 | 1964-65 | 1965-66 | Percentage increase in 1965-66 over 1963-64 |
|---|---|---|---|---|---|
| (A) Manufacturers of specified drugs | 3 | 105 (3·0) | 169 (4·0) | 188 (4·2) | 79·0 |
| (B) Manufacturers-*cum*-formulators | 23 | 2675 (76·5) | 3148 (73·9) | 3375 (74·4) | 26·2 |
| (C) Formulators of specified drugs | 8 | 716 (20·5) | 940 (22·1) | 972 (21·4) | 35·8 |
| All companies . | 34 | 3496 (100) | 4257 (100) | 4535 (100) | 29·7 |

27.2 3 It will be seen from these figures that the net fixed assets for 34 companies had increased by about 7 per cent from Rs 29 crores in 1963-64 to Rs 31 crores in 1965 66 During the same period, the net fixed assets of 32 companies of the Reserve Bank sample referred to in paragraph 27 1 above increased from Rs 18 crores to Rs 20 crores (over 10 per cent) The net fixed assets of manufacturers-*cum*-formulators constituted the largest proportion (over 80%) of the total fixed assets of all the 34 companies covered by our study during the period, while the manufacturers and formulators of specified drugs accounted for less than 10 per cent of the total in each case In absolute terms, while the formulators increased their net fixed assets to over 25 per cent and manufacturers-*cum*-formulators by 6 per cent only, the manufacturers did not record any increase thereof during the period

27 2 4 As regards working capital, it rose from Rs 35 crores in 1963 64 to Rs 45 crores in 1965 66, by nearly 30 per cent, for all the 34 companies of the sample Here again, the manufacturers-*cum* formulators accounted for about 75 per cent of the total working capital of all the 34 companies under the sample, while the formulators and manufacturers of specified drugs accounted for about 21 per cent and 4 per cent respectively of the total during the period In absolute terms, however, all the three categories increased their working capital significantly during the period

27 3 1. The following Table gives the paid-up capital, reserves, net worth, borrowings, capital employed, sales turnover, of funds and the per- paid up capital of the

TABLE 27 4

*The overall financial position of 34 companies engaged in the manufacture of Drugs and Pharmaceuticals*

(Rs in lakhs)

| Particulars | 1963 64 | 1964 65 | 1965-66 |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1 Paid-up Capital | 2,372 | 2,833 | 3,045 |
| 2. Reserves | 2,078 | 2,315 | 2,740 |
| 3 Net Worth | 4,450 | 5,148 | 5,785 |

TABLE 27.4—*Contd.*

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 4. Borrowings . . . . . . | 1,863 | 2,215 | 2,522 |
| 5. External sources of finance as percentage of total funds. . . . | 29·5 | 30·0 | 30·4 |
| 6. Capital employed* . . . . | 5,591 | 6,373 | 7,287 |
| 7. Sales . . . . . . | 8,484 | 9,729 | 11,281 |
| 8. Profits** . . . . . . | 1,769 | 1,909 | 2,294 |
| 9. Profits as percentage of Capital employed | 31·6 | 30·0 | 31·5 |
| 10. Profits as percentage of sales . . | 20·8 | 19·6 | 20·3 |
| 11. Dividends paid on equity shares . . | 16·8 | 16·9 | 17·4 |

NOTE.— *Capital employed during the year.

**"Profits" are calculated as net receipts from sales *minus* costs of material and labour "other expenses" and depreciation. "Other expenses" exclude interest charges, managing agency commission, corporation taxes, and expenses such as share issue expenses, donations etc.

27.3.2. Some of the findings on the basis of this study are as given below :

**Rate of profits on capital employed and sales according to the nature of products produced by the selected companies**

The following Table gives the rate of profits on capital employed and the rate of profits on sales for the manufacturers, the formulators and the manufacturers-*cum*-formulators of the eighteen specified basic drugs. Profits on capital employed as well as on sales turnover are higher for the category of companies engaged in both manufacture and formulation of the specified drugs than for those engaged only in the manufacture or only in the formulation of those drugs.

TABLE 27.5

*Rate of profits on capital employed and sales*

| Category | No of Cos | 1963 64 | 1964 65 | 1965-66 |
|---|---|---|---|---|
| (A) Manufacturers of specified basic drugs . . | 3 | 6 5 | 12 5 | 22 5 |
| | | (13 8) | (13 5) | (18 5) |
| (B) Manufacturers-cum formulators of the specified drugs | 23 | 35 4 | 33 5 | 34 9 |
| | | (23 4) | (21 6) | (22 6) |
| (C) Formulators of specified drugs | 8 | 20 6 | 19 2 | 18 8 |
| | | (10 4) | (11 6) | (11 4) |
| (D) All companies . | 34 | 31 6 | 30 0 | 31 5 |
| | | (20 8) | (19 5) | (20 4) |

NOTE —Figures in bracket relate to rate of profits on sales turnover

**27 3 3 Rate of profits on capital employed and sales turnover for the public and private Ltd. companies**

The following table shows that the rate of profits on capital employed as well as on sales turnover is higher for the public limited than for private limited companies engaged in the manufacture and/or formulation of the specified drugs

TABLE 27 6

*Rate of Profits on Capital employed and Sales*

| Category | No of Cos | 1963-64 | 1964 65 | 1965 66 |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| (A) *Public Ltd Companies* (including Hindustan Antibiotics) | 24 | 32 5 | 30 9 | 34 3 |
| | | (22 9) | (20 5) | (22 8) |
| (B) *Private Ltd Companies* (including Haffkine) | 10 | 29 7 | 28 0 | 25 2 |
| | | (17 1) | (17 7) | (15 4) |

TABLE 27.6—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| (C) Govt. Companies (Hindustan Antibiotics) | .. | 21·9 (32·1) | 11·8 (20·2) | 22·6 (28·0) |
| Haffkine . . . . | .. | 14·7 (23·5) | 8·5 (16·1) | 5·0 (11·4) |
| (D) All Companies . . . . | 34 | 31·6 (20·8) | 30·0 (19·5) | 31·5 (20·4) |

### 27.3.4. Rate of profits on capital employed and sales according to the extent of foreign ownership and control of companies

The profitability ratios on capital employed or on sales (given in brackets) are the highest for the foreign majority share-holding companies and the lowest for the Indian majority share-holding as well as for the wholly Indian owned pharmaceutical companies, as revealed by the following Table :

TABLE 27.7

*Rate of profits on capital employed and Sales.*

| Category | No. of Cos. | 1963-64 | 1964-65 | 1965-66 |
|---|---|---|---|---|
| Wholly foreign companies . . | 5 | 34·5 (23·9) | 31·2 (22·9) | 28·7 (19·8) |
| Foreign majority share-holding companies . . . . | 8 | 59·6 (31·3) | 55·9 (26·9) | 54·5 (33·8) |
| Companies with 50% foreign and 50% Indian share-holding . | 2 | 28·1 (17·4) | 33·8 (18·5) | 25·9 (16·8) |
| Indian majority share-holding companies . . . . | 4 | 8·4 (12·1) | 14·5 (14·4) | 25·2 (16·0) |
| Wholly Indian companies . . | 15 | 19·9 (13·2) | 17·7 (11·9) | 19·2 (12·4) |
| All Companies . | 34 | 31·6 (20·8) | 30·0 (19·5) | 31·5 (20·4) |

**27 3 5 Rate of dividends on equity capital according to the nature of production of companies**

The following table shows the rates of dividend declared on equity capital according to the nature of production of companies

TABLE 27 8

*Rate of dividend on equity in per cent*

| Category | No of Cos | 1963-64 | 1964 65 | 1965 66 |
|---|---|---|---|---|
| (A) Manufacturers of specified drugs | 3 | Nil | Nil | Nil |
| (B) Manufacturers-cum formulators of specified drugs | 20 | 16 4 | 18 2 | 18 7 |
| (C) Formulators of specified drugs | 5 | 11 6 | 10 4 | 13 2 |
| All companies | 28 | 15 1 | 16 9 | 17 4 |

It will be seen that dividends were paid only by 25 out of 34 companies during 1963 65 The dividends of companies engaged in both manufacture and formulation of the specified drugs were higher than those of companies engaged in only formulations None of the three selected companies engaged only the manufacture of the specified drugs distributed dividends in the year 1963 64 to 1965 66

**27 3 6 Rate of dividends on equity in the public limited and private limited companies**

The public limited companies progressively increased their rate of dividends from 14 5 per cent to 17 8 per cent during the period while the dividend rate of the private limited companies which was higher than what of the public limited companies in 1963-64 and 1964-65 (17 1 and 17 8) declined in 1965-66 (15 5).

TABLE 27.9

*Rate of dividend on equity in per cent*

| Category | No. of Cos. | 1963-64 | 1964-65 | 1965-66 |
|---|---|---|---|---|
| (A) Public Ltd. Cos. (including Hindustan Antibiotics) | 21 | 14·5 | 16·7 | 17·8 |
| (B) Private Ltd. Cos. (including Haffkine) | 4 | 17·1 | 17·8 | 15·5 |
| All Companies | 25 | 15·1 | 16·9 | 17·4 |

**27.3.7. Rate of dividends on equity according to nature of ownership (foreign or Indian owned)**

The companies with foreign majority share holdings paid the highest dividends each year, ranging from 23 to 30 per cent. The wholly foreign owned companies had a range of 19 to 24 per cent dividends during the period as shown below :

TABLE 27.10

*Rates of dividend on equity in per cent*

| Category | No. of Cos. | 1963-64 | 1964-65 | 1965-66 |
|---|---|---|---|---|
| (A) Wholly foreign companies | 2 | 19·1 | 25·0 | 23·7 |
| (B) Foreign majority share-holding Cos. | 8 | 23·4 | 29·8 | 29·9 |
| (C) Companies with 50% foreign and 50% Indian share-holding | 2 | 8·9 | 7·5 | 9·0 |
| (D) Indian majority share-holding Cos. | 2 | 9·0 | 11·2 | 15·0 |
| (E) Wholly Indian Cos. | 11 | 11·9 | 12·6 | 11·5 |
| All Companies | 25 | 15·1 | 16·9 | 17·4 |

It may also be noted that all the eight foreign majority share holding companies which made profits during the three years paid dividends However, out of the five wholly foreign companies which made profits during all the three years only two paid dividends

### 27.3 8 Percentage of borrowings to total sources of funds according to the nature of output produced by companies

The following table shows the percentages of borrowings to total sources of funds according to the nature of output of companies

TABLE 27 11

*Percentage of borrowings to total sources of funds*

| Category | No of Cos | 1963 64 | 1964 65 | 1965 66 |
|---|---|---|---|---|
| (A) Manufacturers of specified drugs | 3 | 17 5 | 69 4 | 66 9 |
| (B) Manufacturers-cum formulators | 23 | 14 6 | 17 8 | 21 1 |
| (C) Formulators of specified drugs | 8 | 63 3 | 50 7 | 37 9 |
| All companies | 34 | 29 5 | 30 0 | 30 4 |

The percentage of borrowings was the highest for companies engaged only in the manufacture of specified drugs The next highest percentages were [illegible] But they reduced their [illegible] 1963 64 to 1965-66 The [illegible] and formulation of the specified drugs are observed to have the lowest percentages of borrowings, which however, progressively increased from 14 6 per cent in 1963 64 to 21 per cent in 1965 66

### 27.3.9. Percentage of borrowings to total sources of funds for the public limited, private limited and Government Companies

TABLE 27.12

*Percentage of borrowings to total sources*

| Category | No. of Cos. | 1963-64 | 1964-65 | 1965-66 |
|---|---|---|---|---|
| (A) Public Ltd. Cos. (including Hindustan Antibiotics) | 24 | 29·3 | 30·5 | 30·6 |
| (B) Private Ltd. Cos. (including Haffkine Inst.) | 10 | 30·0 | 29·2 | 29·9 |
| (C) *Govt. Companies* Hindustan Antibiotics | .. | Nil | Nil | Nil |
| Haffkine | .. | Nil | Nil | Nil |
| All Companies | 34 | 29·5 | 30·0 | 30·4 |

The public sector pharmaceutical concerns which depend upon the Government budgets do not depend upon borrowings from banks and other outside source.

### 27.3.10. Percentage of borrowing to total sources of funds according to the nature of ownership of companies

The percentage of borrowing is bound to vary with the extent of foreign and Indian ownership and control. Dependence on borrowings was the lowest for the wholly foreign owned concernes, and it increased in an accending order for the foreign majority share-holding companies, the companies with 50 per cent foreign and 50 per cent Indian share-holding and Indian majority share-holding companies.

TABLE 27 13

*Percentage of borrowings to total sources of funds*

| Category | No of Cos | 1963 64 | 1964 65 | 1965 66 |
|---|---|---|---|---|
| (A) Wholly foreign Cos . | 5 | 7 3 | 8 2 | 7 0 |
| (B) Foreign majority share-holding companies | 8 | 26 0 | 26 0 | 23 2 |
| (C) Companies with 50% foreign and 50% Indian share holding . | 2 | 60 7 | 58 4 | 62 5 |
| (D) Indian majority share-holding companies | 4 | 70 0 | 70 0 | 63 5 |
| (E) Wholly Indian companies | 15 | 31 8 | 33 5 | 34 6 |
| All Companies . | 34 | 29 5 | 30 0 | 30 4 |

The wholly Indian companies depended on borrowings to the extent of one-third of their total sources of funds Their dependence on borrowed finance was more than that of the foreign majority share holding companies, and their percentage of borrow[illegible]creased [illegible] during the period The Indian [illegible]anies, however, accounted for the [illegible] of [illegible] finance during all the three years under study

27 4 1 Of the 34 units for which cost analysis was undertaken, one did not furnish its balance-sheet Of the remaining, the figures for two show very wide deviations in comparison to other units In the case of one which is in the small scale sector losses were shown for the period costed and in the case of another which again is in the small scale sector the average capital employed was shown as Rs 1 81 lakhs while the cost of sales was shown as Rs 47 86 lakhs, a highly disproportionate figure These two units have also therefore been excluded from the analysis of the balance sheets on the basis of the figures ascertained as a result of costing The financial working of the remaining 31 units in relation to the overall cost of manufacture and their profitability covering all the products manufactured by them

based on the Balance Sheets and the Profit and Loss Accounts relating to the period for which the actual costs were compiled are set out in Table 27.14

TABLE 27.14

*Gross margin expressed as percentage of capital employed and cost of sales, ratio of capital employed to cost of sales and 15 per cent of capital employed as percentage of cost of sales in respect of the costed units*

| Sl. No. of the unit | Gross Margin as a percentage of | | Ratio of capital employed to cost of sales | 15% on capital employed as related to cost of sales |
|---|---|---|---|---|
| | Capital employed | Cost of sales | | |
| 1 | 2 | 3 | 4 | 5 |
| 1 | 22·48 | 18·73 | 1 : 1·200 | 12·50 |
| 2 | 19·51 | 5·27 | 1 : 3·699 | 4·06 |
| 3 | 8·34 | 2·77 | 1 : 3·012 | 4·98 |
| 4 | 1·61 | 4·85 | 1 : 0·332 | 45·18 |
| 5 | 22·92 | 16·06 | 1 : 1·427 | 10·51 |
| 6 | 25·06 | 24·26 | 1 : 1·033 | 14·52 |
| 7 | 28·82 | 20·78 | 1 : 1·386 | 10·82 |
| 8 | 50·00 | 10·83 | 1 : 4·619 | 3·25 |
| 9 | 15·74 | 11·59 | 1 : 1·357 | 11·05 |
| 10 | 79·34 | 43·47 | 1 : 1·825 | 8·22 |
| 11 | 35·13 | 10·73 | 1 : 3·273 | 4·58 |
| 12 | 65·02 | 13·76 | 1 : 4·724 | 3·19 |
| 13 | 31·48 | 25·63 | 1 : 1·228 | 12·21 |
| 14 | 5·67 | 12·14 | 1 : 0·467 | 32·12 |
| 15 | 26·86 | 37·71 | 1 : 0·712 | 21·07 |
| 16 | 20·74 | 17·71 | 1 : 1·172 | 12·80 |
| 7 | 26·14 | 12·83 | 1 : 2·038 | 7·36 |
| 8 | 18·96 | 4·81 | 1 : 3·941 | 3·81 |
| [illegible] | 10·67 | 9·49 | 1 : 1·125 | 13·33 |
| | 32·16 | 33·68 | 1 : 0·955 | 15·71 |
| | 7·88 | 4·66 | 1 : 1·690 | 8·88 |
| | 109·86 | 106·35 | 1 : 1·033 | 14·52 |
| | 82·16 | 53·27 | 1 : 1·542 | 9·72 |
| | 44·35 | 52·54 | 1 : 0·844 | 17·77 |

TABLE 27 14—*Concld*

| 1 | 2 | 3 | 4 | | 5 |
|---|---|---|---|---|---|
| 25 | 17 71 | 15 64 | 1 | 1 132 | 13 25 |
| 26 | 38 91 | 40 35 | 1 | 0 964 | 15 56 |
| 27 | 3 04 | 4 47 | 1 | 0 679 | 22 09 |
| 28 | 36 00 | 19 56 | 1 | 1 881 | 7 97 |
| 29 | 6 68 | 7 77 | 1 | 0 860 | 17 44 |
| 30 | 15 39 | 23 48 | 1 | 0 656 | 22 87 |
| 31 | 11 27 | 5 62 | 1 | 2 004 | 7 49 |
| Average | 34 77 | 27 64 | 1 | 1 258 | 11 93 |

This sample is somewhat smaller than the sample analysed earlier For, the total turnover of the 34 units in the earlier analysis amounted to Rs 112 62 crores while the corresponding figure for these 31 units is Rs 97 92 crores Of these 23 units are common to both while the remaining are different Five of the units are manufacturers of basic drugs 21 manufacture both basic drugs as well formulations and five only formulations The overall financial position of these units is set out as follows —

TABLE 27 15

*Overall financial position of 31 companies engaged in the manufacture of drugs and pharmaceuticals*

(Rs in lakhs)

| | Particulars | | |
|---|---|---|---|
| 1 | Paid up capital | 2 403 97 | (1965 66) |
| 2 | Reserves and surplus | 2 450 04 | (1965 66) |
| 3 | Net worth | 4 854 01 | (1965-66) |
| 4 | Loans | 1 294 56 | (1965 66) |
| 5 | Loans as percentage of total funds | 21 1 | (1965-66) |
| 6 | Average capital employed | 6 098 68 | (Actual costed period) |
| 7 | *Sales turnover* | 9 791 98 | Do |
| 8 | Gross margin | 2,120 40 | Do |
| 9 | Gross margin as percentage of average capital employed | 34 8 | Do |
| 10 | Gross margin as percentage of sales turnover | 21 7 | Do |

27.4.2. Analysed by the nature of activity the rate of gross margin on average capital employed as well as on turnover was as follows :—

TABLE 27.16

*Rate of gross margin on average capital employed and sales turnover*

| Category | No. of companies | On capital employed | On sales turnover |
|---|---|---|---|
| | | (Actual period) | costed |
| (A) Manufacturers of specified basic drugs . | 5 | 9·7 | 10·3 |
| (B) Manufacturer-*cum*-formulators . . | 21 | 38·3 | 23·4. |
| (C) Formulators of specified basic drugs . | 5 | 17·1 | 8·5 |
| All companies . | 31 | 34·8 | 21·7 |

27.4.3. By nature of holding the position of the rate of gross margin on average capital employed as well as turnover was as follows :—

TABLE 27.17

*Rate of gross margin on average capital employed and sales turnover*

| Category | No. of companies | On capital employed | On sales turnover |
|---|---|---|---|
| (A) Wholly foreign companies . . . | 3 | 26·8 | 18·0 |
| (B) Foreign Majority . . . . | 7 | 62·5 | 34·1 |
| (C) Equal Participation . . . . | 1 | 20·7 | 15·0 |
| (D) Indian Majority . . . . | 6 | 17·0 | 12·1 |
| (E) Wholly Indian . . . . . | 14 | 26·1 | 16·1 |
| All companies . | 31 | 34·8 | 21·7 |

27 4 4 If these units are distributed according to the con stitution the position is as follows —

TABLE 27 18

*Rates of gross margin on average capital employed and sales turnover*

| Category | No of com panies | On cap tal employed | On sales turnover |
|---|---|---|---|
| | | (Actual costed period) | |
| (A) Public Ltd Companies | 22 | 36 9 | 23 8 |
| (B) Private Ltd Companies | 5 | 30 9 | 16 0 |
| (C) Partnership Concerns | 3 | 39 9 | 16 7 |
| (D) Departmental Concerns | 1 | 3 5 | 6 7 |
| All companies | 31 | 34 8 | 21 7 |

27 4 5 In the case of units analysed earlier profits as percentage of the capital employed worked out to 31 5 per cent for the year 1965 66 while the corresponding figure for the present sample is 34 8 Gross margin as percentage of sales turnover is 20 4 per cent in the earlier sample and 21 7 per cent in the present one Both in the present and previous sample manufacturers-*cum* formulators constitute two thirds of the sample and of the remaining the two classes of producers are equally divided in the present while in the previous analysis formulators predominated There is, however, a certain degree of disparity between the figures of profitability in the previous and present sample with regard to the manufacture of basic drugs It is not so large for the other classes Broadly speaking manufacturing *cum* formulating appears to be more profitable than either of the other two activities carried on singly On the basis of both the analyses pure formulating activity is less remunerative than manufacture of basic drugs as well as formulations Partnership concerns have shown a high level of profit on capital employed By sales turnover both private limited companies and partnership concerns are on the same level while public limited companies have definitely fared better Foreign majority holding have done better than only foreign companies or those with equal participation By nature of

activity and also by ownership the rate of gross margin on cost of sales and ratio of capital employed to cost of sales the position is as indicated in tables 27.19 and 27.20.

TALBE 27.19

*Rate of gross margin on cost of sales and ratio of capital employed to cost of sales*

| Category | No. of Cos. | Rate of gross margin on cost of sales | Ratio of capital employed to cost of sales |
|---|---|---|---|
| | | (Actual costed period) | |
| (A) Manufacturers of specified drugs . . | 5 | 11·5 | 1: 0·85 |
| (B) Manufacturers-*cum*-formulators . . | 21 | 30·5 | 1: 1·26 |
| (C) Formulators of specified drugs . . | 5 | 9·2 | 1: 1·86 |
| All companies . | 31 | 27·6 | 1 : 1·26 |

TABLE 27.20

*Rate of gross margin on cost of sales and ratio of capital employed to cost of sales*

| Category | No. of Cos. | Rate of gross margin on cost of sales | Ratio of capital employed to cost of sales |
|---|---|---|---|
| | | (Actual costed period) | |
| (A) Public Ltd. Companies . . . | 22 | 31·3 | 1 : 1·18 |
| (B) Private Ltd. Companies . . . | 5 | 19·1 | 1 : 1·62 |
| (C) Partnership Concerns . . . . | 3 | 20·0 | 1 : 2·00 |
| (D) Departmental Concern . . . | 1 | 7·5 | 1 : 0·47 |
| All companies . | 31 | 27·6 | 1 : 1·26 |

27 4 6 The same analysis by nature of holdings is given in Table 27 21

### Table 27 21

*Rate of gross margin on cost of sales and ratio of capital employed to cost of sales*

| Category | Nos of Cos | Rate of gross margin on cost of sales | Ratio of capital employed to cost of sales |
|---|---|---|---|
| | (Actual | costed | period) |
| (A) Wholly foreign | 3 | 22 0 | 1 1 22 |
| (B) Foreign Majority | 7 | 51 6 | 1 1 21 |
| (C) Equal Participation | 1 | 17 7 | 1 1 17 |
| (D) Indian Majority | 6 | 13 7 | 1 1 23 |
| (E) Wholly Indian | 14 | 19 2 | 1 1 36 |
| All Companies | 31 | 27 6 | 1 1 26 |

27 4 7 The percentage of loans total funds etc analysed by nature of activity, ownership and holding is set out in Tables 27 22 27 23 and 27 24

### Table 27 22

*Percentage of loans to total funds*

| Category | No of Cos | Loans as % of total funds (1965-66) |
|---|---|---|
| (A) Manufacturers of specified drugs | 5 | 69 5 |
| (B) Manufacturers-*cum* formulators | 21 | 16 7 |
| (C) Formulators of specified drugs | 5 | 17 9 |
| All Companies | 31 | 21 1 |

34—1 T C Bom /70

TABLE 27.23

*Percentage of loans to total funds*

| Category | No of Cos. | Loans as % of total funds (1965-66) |
|---|---|---|
| (A) Public Ltd. Companies . . . | 22 | 23·3 |
| (B) Private Ltd. Companies . . . | 5 | 15·4 |
| (C) Partnership Concerns . . . . | 3 | 37·0 |
| (D) Departmental Concern . . . | 1 | 37·0 |
| All Companies . | 31 | 21·1 |

TABLE 27.24

*Percentage of loans to total funds*

| Category | No. of Cos. | Loans as % of total funds (1965-66) |
|---|---|---|
| (A) Wholly foreign Companies . . . | 3 | 6·9 |
| (B) Foreign Majority . . . . | 7 | 10·2 |
| (C) Equal Participation . . . . | 1 | 47·9 |
| (D) Indian Majority . . . . | 6 | 55·8 |
| (E) Wholly Indian . . . . . | 14 | 26·6 |
| All Companies . | 31 | 21·1 |

27.4.8. The sales turnover is roughly equivalent to the capital employed in the case of manufacturers of basic drugs, it is very much higher in the case of the units which combine both the activities and the highest for formulators only. These conclusions are confirmed by both the studies. Manufacture of basic drugs appears therefore to be an activity which is capital intensive and in which the profitability is to be judged from the point of view of the capital employed. On the other hand, formulating activity by itself is not capital intensive and profitability is related to the sales turnover since capital employed is about half of the amount of sales turnover.

## CHAPTER 28

## ESTIMATES OF COSTS AND FAIR EX-WORKS PRICES OF BASIC DRUGS

28 1 1 As mentioned in chapter 3 we selected certain representative units for detailed cost study of the 18 basic drugs specified in the terms of reference which would indicate the disparity between the costs (based on current trends of prices of raw materials, stores and expenses) and the existing selling prices For this purpose, initially 36 units in the industry were selected From the selected sample, three units had to be subsequently excluded and a new one added for the following reasons —

(i) In the case of the Oriental Pharmaceutical Industries Ltd , Bombay details maintained were far from adequate to assess costs of its products

(ii) Data relating to costs of the Bengal Chemicals & Pharmaceutical Works Ltd , Calcutta were not capable of being analysed Several activities of this firm were so inextricably mixed up that separation of costs posed problems Records showing timings for different products made in the same department were also not available

(iii) The Standard Pharmaceuticals Ltd , Calcutta was initially chosen for cost study but was replaced later on at the suggestion of the Assessor by Dey's Medical Stores (Mfg ) Pvt Ltd , Calcutta which produces a large range of formulations

28 1 2 Cost data for the selected periods were compiled in respect of 34 units, covering producers of the 18 specified basic drugs' and their formulations The results from this selection may be considered as fairly representative costs of the industry as a whole

28 1 3 Estimates of future costs have also been prepared taking into account the latest prices of raw materials labour costs, stores and other expenses, as well as the volume of production envisaged for future The analyses of the costs of 'basic drugs' and 'formulations' thereof are being discussed later in the Report The reports of the Cost Accounts Officers on detailed costs for the actual period and the Commission's estimates for the future are sent along with Report as confidential enclosures

### 28.1.4. Units and products manufactured

Of the 34 units selected for costing, five produce 'basic drugs' exclusively; ten units only 'formulations' and the remaining 19 units produce both 'basic drugs' and 'formulations'. The names of the selected units and the range of their products covered by our cost study are given in Table 28.1.

TABLE 28.1

*List of units and their basic drugs and/or formulations selected for costing*

| Sl. No. | Name of the Unit | Basic drugs | Single drug formulations | | Multiple drug formulations | |
|---|---|---|---|---|---|---|
| | | | Name (Brand name in capital) | Basic drug contained | Name (Brand name in capital) | Basic drugs contained |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | *A. Manufacturers of basic drugs registered with D.G.T.D.* | | | |
| 1 | Alembic Chemical Works Ltd., Baroda. | 1. Penicillin | 1.(a) Sodium Penicilin G. Inj. (b) Procain Penicillin G. Inj. (c) Penicillin G. procain fortified with Penicillin G. Sodium Inj. | Penicillin | 1. PRECIN (Fortified with opthalmic ointment) | Prednisolone and Chloramphenicol. |
| | | | 2. Penicillin V. Tabs. | Penicillin | | |

| | | | | | |
|---|---|---|---|---|---|
| | | 3 CYCOBAL | Vitamin B12 | | |
| | | 4. CYCOBAL-H | Vitamin B12 | | |
| | | 5 (a) ALCHLO-QUIN Tabs | Iodo Chloro hydoxy quinoline | | |
| | | (b) ALIDOQUIN tabs | ,, | | |
| | | 6 Streptomycin Inj | Streptomycin | | |
| | | 7 Streptomycin Inj | Streptomycin | | |
| | | 8 BISTREPEN Inj | Streptomycin | | |
| | | 9 ALCOPHENI COL Caps | Chloramphenicol | | |
| | | 10 ALCYCLIN | Tetracycline | | |
| | | 11 ASCORBIC ACID Inj | Vitamin C | | |
| | | 12 CIVINAL Tabs | Vitamin C | | |
| | | 13 Suphadiazine Tabs. | Sulphadiazine | | |
| 2 Bengal Immunity Co Ltd Calcutta | 1 I N H | 1 Isoniacid Tabs | I N H | DINOCHLOR Tabs | Iodochlorhydroxyquinoline and Chloroquin |
| | 2 Iodo chlor hydroxy quinoline | 2 *Iodo*-Chlor hydroxy-quinoline Tabs | Iodochlor hydroxy quinoline | | |
| | 3 Chloroquin | 3 Chloroquin Phosphate Tabs | Chloroquin | | |
| | 4 Tetanus Antitoxin | 4 Cyanocobalamin Inj | Vitamin B12 | | |

TABLE 28.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 2. | Bengal Immunity Co. Ltd. Calcutta—*Contd.* | | 5. Ascorbic Acid Inj.<br>6. Insulin Inj.<br>7. Tetanus Anti-Toxin Inj. | Vitamin C<br>Insulin<br>Tetanus Anti-toxin. | .. | .. |
| 3 | Biochemical and Synthetic products Ltd., Hyderabad. | PAS and its Salts | .. | .. | | |
| 4 | Biological Evans Ltd.. Hyderaba. | 1. I. N. H.<br>2. PAS and its salts<br>3. Tolbutamide<br>4. Iodochlor-hydroxy quinoline<br>5. Tetanus Antitoxin | 1. Isoniazid Tabs<br>2. Sodium PAS granules<br>3. Sodium PAS Tabs.<br>4. Tetanus Anti-toxin Inj.<br>5. Vit. B12 Inj. | I. N. H.<br>PAS | .. | |
| 5 | Bohringer Knoll Ltd., Bombay. | Chloramphenicol | Chloramphenicol (CHLORAMPHYCIN) | Chloramphycin S Caps. | Chloramphenicol & Streptomycin. | |
| 6 | Boots Pure Drug Co. (India) Ltd., Bombay. | Insulin | 1. Insulin Inj.<br>2. Insulin/Zinc suspenion | Insulin<br>Insulin | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 3 Isophane Insulin *Inj* | Insulin | | |
| | | | 4 Insulin Protamin Zinc Inj | | | |
| | | | 5 Sulphadiazine Tabs | Sulphadiazine | | |
| | | | 6 *DELTASTAB* | *Prednisolone* | | |
| 7 | Cyanamid India Ltd Bulsar | Tetracyclines | 1 ACHROMYCIN Caps | Tetracycline | Aureomycin | Tetracycline |
| | | | 2 AUREOMYCIN Caps | | Intravenous | HCL and Ascorbic acid buffer |
| | | | 3 AUREOMYCIN Ointment | | | |
| | | | 4 UAREOMYCIN Superesoid Powder | | | |
| | | | 5 LEDERMYCIN Caps | | | |
| | | | 6 Sulphadiazine | Sulphadiazine | | |
| | | | 7 CHEWCEE | Vitamin C | | |
| 8 | East India Pharmaceutical Works *Ltd , Calcutta* | Iodo-chlor hydroxy quinoline | Iodochlorohydroxy quinoline Tabs (ENTEROQUINOL) | Iodo chlor hydro-xyquinoline | | |
| 9 | Glaxo Laboratories *(India) Pvt Ltd* Bombay | 1 Vitamin B12 | 1 Cyanocobalamin Inj | *Vitamin B12* | 1 MYSTRETON Inj | Penicillin Dihydrostreptomycin |
| | | 2 Prednisolone | 2 Hydroxycobalamin *Inj* | Vitamin B12 | 2 Comycin | *Dihydrostreptomycin & Streptomycin* |

TABLE 28.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 9 | Glaxo Laboratories (India) Pvt. Ltd., Bombay—*Contd.* | 3. Vitamin A | 3. Prednisolone Tabs. (DELTA-EFCORLIN) | Prednisolone | 3. CRYSTAMY-CIN | Sodium Penicillin G and streptomycin. |
| | | | | | 4. SECLOMY-CIN FORTE | Penicillin Sodium, Benzyl Penicillin Procain & Streptomycin Sulphate. |
| | | | 4. Ascorbic Acid Inj. (CELIN) | Vitamin C | | |
| | | | 5. Ascorbic Acid Tabs. (CELIN) | Vitamin C | | |
| | | | 6. Penicillin G. Sodium Inj. (CRYSTAPEN) | Penicillin | | |
| | | | 7. Penicillin V Tabs. (CRYSTA-PEN V) | Penicillin | | |
| | | | 8. Penicillin G Procaine fortified with penicillin G Sodium Inj. (SECLOPEN) | Penicillin | | |
| | | | 9. Streptomycin Sulphate Inj. | Streptomycin | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 10 Di hydro-streptomycin Sulphate Inj | Di hydrostreptomycin | | |
| | | | 11 Vitamin A Inj (PREPALIN FORTE) | A Vitamin | | |
| 1 | | | 12 Isoniazid Tabs | I N. H | | |
| | | | 13 Insulin Inj | Insulin | | |
| | | | 14 Insulin Zinc *suspension* (Lente) Inj | Inlsulin | | |
| | | | 15 Protamin Zinc Insulin Inj | Insulin | | |
| 10 | Haffkine Institute, Bombay | Tetanus Anti toxin | 1 Tetanus-Antitoxin Inj | Tetanus Anti-*toxin* | | |
| | | | 2 Tolbutamide Tabs | Tolbutamide | | |
| 11 | Hindustan Antibiotics Ltd , *Poona* | 1 Penicillin | 1 Sodium Penicillin G Inj | Penicillin | Streptopenicillin Inj | Procain Penicillin G Sodium *Penicillin* & Streptomycin |
| | | 2 Streptomycin | 2 Procaine Penicillin | Penicillin | | |
| | | | 3 Penicillin V Tabs | Pen cillin | | |
| | | | 4 Penicillin G Procaine fortified with Penicillin G Inj | Penicillin | | |

TABLE 28.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 11 | Hindustan Antibiotics Ltd. Poona—*Contd.* | | 5. Streptomycin Sulphate Inj. | Streptomycin | | |
| | | | 6. Streptodicin Inj. | Streptomycin | | |
| | | | 7. Chlortetracycline caps. | Tetracycline | | |
| 12 | Hoechst Pharmaceuticals Ltd., Bombay. | Tolbutamide | 1. Tolbutamide Tabs. (RASTINON) | Tolbutamide | | |
| | | | 2. Tetanus Antitoxin Inj. | Tetanus Antitoxin. | | |
| | | | 3. Prednisolone Tabs. | Prednisolone | | |
| | | | 4. Calcium PAS Granules (AMINOX) | | | |
| | | | 5. Sodium PAS Granules | PAS | | |
| | | | 6. Tetracycline caps. (HOSTACYCLINE) | Tetracycline | | |
| 13 | May & Baker Ltd., Bombay. | Sulphadiazine | 1. Sulphadiazine Tabs. | Sulphadiazine | | |
| | | | 2. Di-iodo-hydroxyquinoline Tabs. (EMBEQUIN) | Iodo-chlor-hydroxy-quinoline. | | |
| | | | 3. Penicillin Tabs. | Penicillin | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4 Isoniazid Tabs. | I. N. H. | | |
| | | | 5 Chiro-quinphosphate Tabs (NEVAQUIN) | Chloroquin | | |
| 14 | Merck Sharp & Dohme of India Ltd , Bombay | 1 Vitamin B12 | 1 Cyanocobalamin Inj (RADISOL) | Vitamin B12 | DIOSTREP | Streptomycin and dihydrostreptomyin |
| | | 2 Prednisolone | 2 Hydroxycobalamin Inj (RADISOLH) | Vitamin B12 | | |
| | | | 3 Prednisolone Tabs (CODELOCRTON) | Prednisolone | | |
| | | | 4 Penicillin G Inj (SOPHEN) | Penicillin | | |
| | | | 5 Streptomycin Sulphate Inj. | Streptomycin | | |
| | | | 6 Dihydrostreptomycin Inj | Dihdrostreptyomyin Inj | | |
| | | | 7 TRYCIN Caps | Tetracycline | | |
| 15 | Parke Davis Ltd , Bombay | 1 Chloramphenicol | 1 Chloramphenicol Caps (CHLORNYCETIN KAPSEALS) | Chloramphenicol | | |
| | | | 2 Amodiaquine Tabs (COMOQUIN) | Amodiaquin | 1 CHLOROSTREP KAPSEALS | Chloramphenicol & streptomycin. |
| | | | 3 Chloromycitin Intra mascular Inj | Chloramphenicol | 2 CHLOROSTREP SUSPENSION | Chloramphenicol & streptomycin. |

TABLE 28.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 16 | Pfizer Ltd., Bombay. | 1. I. N. H. | 1. Isoniazid Tabs | I. N.H | 1. DUPENMYCIN Inj. | Sodium Penicillin G. and Streptomycin Sulphate. |
| | | 2. PAS & its Salts | 2. Sodium PAS Granules | PAS | | |
| | | 3. Tetracycline | 3. PAS Acid Granules. | PAS | | |
| | | 4. Chlorpropamide | 4. Penicillin G Inj. (DUPEN). | Penicillin | | |
| | | | | | 2. COMBIOTIC inj. | Streptomycin Sulphate, Procaine Penicillin G & Sodium Penicillin G. |
| | | | | | 3. PPF-4 Inj.<br>4. PPF-20 Inj. | Sodim Penicillin G & Sodium Penicillin. |
| | | | 5. Penicillin V Tabs. (PENCIN) | Penicilllin | | |
| | | | 6. Penicillin G Procain fortified with Penicillin G Sodium Inj. | Penicillin | | |

| | |
|---|---|
| 7. Streptomycin Sulphate (STREPTONEX). | Streptomysin |
| 8 Streptodicin Inj | Streptomycin |
| 9 Dihydrostreptomycin Inj | Dihydrostreptomycin |
| 10 Streptopenicillin Inj. | Streptomycin |
| 11 Chloramphenicol Caps (CHLORAMED) | Chloramphenicol. |
| 12 Tetracycline Caps | Tetracycline |
| 13 Oxytetracycline Caps (TERRAMYCIN). | Tetracycline |
| 14 Prednisolone Tabs (DELTACORTRIL) | Prednisolone |
| 15 Insulin Zinc Suspension (INSULIN NOVO LENTE) | Insulin |
| 16 Insulin Inj | Insulin |
| 17 Insulin, Zinc Suspension (Amorphous) Inj (INSULIN NOVO SEMI LENTE) | Insulin |

TABLE 28.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 16 | Pfizer Ltd., Bombay—*contd.* | | 18. Insulin Zinc Suspension (Crystaline Inj. (INSULIN NOVO ULTRA LENTE). | Insulin | | |
| | | | 19. Chloropropamide Tabs. (DIA BANESE). | Chloropropamide | | |
| 17 | Roche Products Ltd., Bombay. | Vitamin A | 1. Vitamin A Inj. (AROVIT). | Vitamin A | | |
| | | | 2. Vitamin A Tabs: (AROVIT). | Vitamin A | | |
| | | | 3. Ascorbic Acid Inj. (REDOXON). | Vitamin C | | |
| | | | 4. Ascorbic Acid Tabs. (REDOXON). | Vitamin C | | |
| 18 | Sarabhai Merck Ltd., Baroda. | Vitamin C | .. | .. | .. | .. |
| 19 | Synbiotics Ltd., Baroda. | 1. Streptomycin<br>2. Tetracyclines<br>3. Vitamin B12<br>4. I. N. H.<br>5. Iodochlorhydroxyquinoline. | .. | .. | .. | .. |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20 | Wander Pharmed Ltd., Bombay. | PAS | 1 PAS, Sodium 0 5 gm Tabs. 2 Calcium PAS 0 5 gm Tabs PAS }* | | | |
| 21 | Wyeth Laboratories Ltd , Bombay | *Prednisolone* | 1. Prednisolone Tabs. | Prednisolone | | |
| | | | 2. WYSOLONE | Prednisolone | | |
| | | B *Small scale manufacturers of basic drugs* | | | | |
| 22 | Alliance Trading Corporation, Calcutta. | Iodochlohydroxyquinoline | 1. Iodo-chlor-hydroxyquinoline Tabs. | Iodo-chlorhydroxyquinoline | 1. PASIMECIN | I N H. Vitamin B12 & Calcium PAS. |
| | | | 2 Sodium PAS Granules | PAS | | |
| 23 | Neogy Laboratories, Calcutta | Iodochlorhydroxyquinoline. | .. | – | – | .. |
| 24 | Gujarat Pharmaceuticals, Ahmedabad. | 1 I. N. H. | 1 Tetracycline Caps (BIOCYCLINE) | Tetracycline | I. C P Tabs | PAS 500 mg and *Isoniazid* 16 66 mg. |
| | | 2. P A S. | 2 Tolbutamide Tabs | Tolbutamide | | |
| | | 3. Iodochlorhydroxyquinoline | 3 Chloramphenicol Caps | Chloramphenicol | | |
| | | | 4 Cynocobalamin Injection | Vitamin B12 | | |

*Manufactured under loan licence and not taken for costing

TABLE 28. 1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 24 | Gajarat Pharmaceuticals, Ahmedabad—*contd.* | | 5. Hydroxy Cobalamin Injection. | Vitamin B12 | | |
| | | | 6. Vitamin C Tabs. | Vitamin C | | |
| | | | 7. Chlorpropamide Tabs. | Chlropropamide Tabs. | | |
| | | | 8. Prednisolone Tabs. | Prednisolone | | |
| | | | 9. Chloroquin phosphate Tabs. | Chloroquin | .. | |
| | Suneeta Laboratories, Indore. | I. N. H. | .. | .. | .. | .. |
| 26 | Cadila Laboratories, Ahmedabad. | | C. *Formulators (Not manufacturers of basic drugs)* | | | |
| | | | 1. Cyanocobalamin Inj. | Vitamin B12 | | |
| | | | 2. Hydroxycobalamin Inj. | Vitamin B12 | ISOCADIPAS | I. N. H. & PAS |
| | | | 3. Chloramphenicol | Chloramphenicol. | | |
| | | | 4. Sulphadiazine Tabs. | Sulphadiazine | | |

| | | | |
|---|---|---|---|
| | | 5. Vitamin C Tabs | Vitamin C |
| | | 6. Isonicotinic Acid Hydrazide Tabs, (CADIZIDE) | I.N H. |
| | | 7. PAS Acid Tabs. | PAS. |
| | | 8. Prednisolone Tabs. | Prednisolone |
| | | 9 Di iodohydroxy-quinoline Tabs | Iodochlorhydro-xyquinoline |
| 27 | Chemical Industrial & Pharmaceutical Laboratories Ltd. (CIPLA), Bombay. | 1 Chloramphenicol Caps (CIPLAMYCETIN) | Chloramphenicol |
| | | 2. Ascorbic Acid Inj (CETAMID) | Vitamin C |
| | | 3 Ascorbic Acid Tabs | Vitamin C |
| | | 4 Tolbutamide Tabs (TOLMID) | Tolbutamide |
| | | 5 Cyanocobalamin Inj. | Vitamin B12 |
| | | 6 Hydroxycobalamin Inj | Vitamin B12(b) |
| | | 7 Di-iodohydroxy-quinoline Tabs | Iodochlorhy-droxyquinoline |

TABLE 28.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 28 | Dey's Medic[al] Stores (Mfg.) Co., P. Ltd., Calcutta. | | 1. Streptomycin Sulphate Inj. | Streptomycin | | |
| | | | 2. Chloramphenicol Caps. (ENTEROMYCETIN) | Chloramphenicol | ENTROSTREP-C | Chloramphenicol & Streptomycin Sulphate. |
| | | | 3. Tetracycline capsules (SUBAMYCIN) | Tetracycline | Calcium PAS & INH | PAS & INH |
| | | | 4. Cyanocobalamin Inj. (VITADOUZ) | Vitamin B12 | ENTEROCYCLINE Caps. | Chloramphenicol & Tetracycline Hydrochloride |
| | | | 5. Ascorbic Acid Tabs. | Vitamin C | ENTEROCYCLINE-C Caps. | Chloramphenicol & Tetracycline Hydroxide. |
| | | | 6. Isoniazid Tabs. | INH. | PRO-K-MYCIN Inj. | Procaine Penicillin G Forte & Streptomycin Sulphate. |
| | | | 7. Sulphadiazine Tabs. | Sulphadiazine | | |
| | | | 8. Calcium PAS Tabs. (Calcium Amino Salcyclates) | PAS | | |
| | | | 9. Iodochlorhydroxyquinoline Tabs. | Iodochlorhydroxyquinoline | | |
| | | | 10. Prednisolone Tabs. | Prednisolone | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 29 | Gurco Pharma Pvt. Ltd, New Delhi. | | 1. Chloramphenicol Caps. | Chloramphenicol | Gurcomycetin | Chloramphenicol & Di-hydrostreptomycin Sulphate. |
| | | | 2. Tolbutamide Tabs. | Tolbutamide | Strep Cap. | |
| | | | 3 Vitamin C Tabs. | Vitamin | | |
| | | | 4 INH. Tabs. | INH | | |
| | | | 5. Sodium PAS Tabs. | PAS | | |
| | | | 6 Prednisolone Tabs. | Prednisolone | | |
| | | | 7 Tetracycline Tabs | Tetracycline | | |
| | | | 8 Cyanocobalamin Inj | Vitamin B12 | | |
| | | | 9 Hydroxycobalamin Inj | Vitamin B12 | | |
| 30 | Khandelwal Laboratories Ltd, Baroda. | | 1 Tetracycline Caps | Tetracycline | | |
| | | | 2 Cyanocobalamin Inj | Vitamin B12 | | |
| | | | 3 Sulphadiazine Tabs | Sulphadiazine | | |
| | | | 4 Vitamin C Tabs | Vitamin C | | |
| 31 | Martin & Harris Ltd., Calcutta. | | 1 Sodium PAS Tabs. | PAS | DIAQUINITE Tabs | Chloroquin Phosphate & di-iodohydroxyquinoline |

TABLE 28.1—*Contd.*

| | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 31 | Martin & Harris Ltd., Calcutta—*contd.* | | 2. Sulphadiazine Tabs. | Sulphadiazine | | |
| | | | 3. Ascorbic Acid Tabs. | Vitamin C | | |
| | | | 4. Chloroquin Phosphate | Chloroquin | | |
| | | | 5. Di-iodohydroxyquinoline | Iodochlorhydroxyquinoline | | |
| | | | 6. PAS Calcium Tabs. | PAS. | | |
| | | | 7. Vitamin B12 | Vitamin B12 | | |
| | | | 8. INH. Tabs. | INH. | | |
| 32 | Sarabhai Chemicals Ltd., Bombay. | | 1. AMBYSTRIN-5 Inj. | Streptomycin | CRYs-4 Inj. | Sodium Penicillin & Procaine Penicillin |
| | | | 2. ASCORBICIN Tabs. | Vitamin C | CRYs-5 Inj. | |
| | | | 3. CRYSTICILIN Inj. | Procaine Penicillin G | CRYs-12 Inj. | Sodium Penicillin & Procaine Penicillin |
| | | | 4. NYDRAZID Tabs. | INH. | DICRYSTIN-S Inj. | Procaine Penicillin G & Streptomycin |
| | | | 5. Penicillin G Sodium Inj. | Penicillin | PENMYNFORTIS Inj. | Sodium Penicillin G and Streptomycin |

| | | | | | |
|---|---|---|---|---|---|
| | | 6. Pentid Tabs. | Penicillin | | |
| | | 7. RUBRAMIN-H | Cyanocobalamin | | |
| | | 8. RUBRAMIN-H | Hydroxycobalamin | | |
| | | 9. *STECLIN* Caps. | Tetracycline | | |
| | | 10. STECLIN/INTRAVENUS | Tetracycline | | |
| 33 | Unichem Laboratories Ltd., Bombay. | 1. Hydroxycobalamin Inj. | *Vitamin* B12 | TEQUINOPIL | Tetracycline |
| | | 2. Tolbutamide Tabs (UNITOLBID) | Tolbutamide | Tabs | *Hydrochloride* |
| | | 3. *Insulin Inj.* | Insulin | | Iodochlor hydroxyquinoline & Chloroquin Phosphate |
| | | 4 Insulin Zinc Suspension (LENTE) Inj (INSULIN UNIDURA) | Insulin | | |
| | | 5. *Insulin Zinc* Suspension Inj *Amorphous* (INSULIN SEMODURA) | Insulin | | |
| | | 6 Insulin Protamin Zinc Inj. | Insulin | | |
| | | 7 Vitamin A Inj. (MASSIVE) | Vitamin A | | |

TABLE 28.1—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| | | | 8. Iodochlorhydroxyquinoline Tabs. | Iodochlorhydroxyquinoline | | |
| | | | 9. Insulin Inj. | Insulin | | |
| | | | 10. I.N.H. Tabs. | I.N.H. | | |
| | | | 11. Vitamin B12 Inj. | Vitamin B12 | | |
| | | | 12. Vitamin C Tabs. | Vitamin C | | |
| | | | 13. Chloramphenicol Caps. | Chloramphenicol | | |
| | | | 14. Chloroquin Phosphate Tabs. | Chloroquin | | |
| 34 | Zenith Pharmaceuticals Ltd., Bombay. | | 1. Iodochlorhydroxyquinoline Tabs. | Iodochlorhydroxyquinoline. | Isocalamisal Tabs. | Isoniazid and Calcium PAS |
| | | | 2. Prednisolone Tabs. | Prednisolone | | |
| | | | 3. Sodium PAS Tabs. | PAS | | |
| | | | 4. Isoniazid Tabs. | PAS | | |
| | | | 5. Penicillin Tabs. | Penicillin | | |
| | | | 6. Vitamin B12 Inj. | Vitamin B12 | | |
| | | | 7. Vitamin B12 Tabs. | Vitamin B12 | | |
| | | | 8. Vitamin C Inj. | Vitamin C | | |

28.1.5. The distribution of the units as between small scale and large scale manufacturers is as follows:

| Particulars | Large scale Units | Small scale Units | Total |
|---|---|---|---|
| Basic drugs only | 3 | 2 | 5 |
| Formulations only | 7 | 3 | 10 |
| Basic drugs and formulations both | 18 | 1 | 19 |
| | 28 | 6 | 34 |

It will thus be observed that among the costed units 21 in the large scale and 3 in the small scale manufacture basic drugs, and 25 in the large scale and 4 in the small scale manufacture formulations.

28.1.6. There are certain basic drugs which are produced by single units and therefore an inter firm comparison of their costs of the same products is not possible to indicate whether the costs obtained at these units are reasonable or otherwise. In such cases the alternative is to frame our conclusions based on the results of our cost studies, discussions with the representatives of the units and our Assessors. The units in this category together with the respective basic drugs manufactured by them are listed below:—

| Name of unit | Basic drug manufactured |
|---|---|
| (i) Merck-Sharp | Vitamin B-1 |
| (ii) Sarabhai Merck | Vitamin C |
| (iii) May & Baker . . . | Sulphadiazine |
| (iv) Parke-Davis | Amodiaquine |
| (v) Bengal Immunity | Chloroquin Phosphate |
| (vi) Pfizer | Chlorpropamide |
| (vii) Hoechst | Tolbutamide |
| (viii) Boots | Insulin |
| (ix) Wyeth Labs | Prednisolone |

28.1.7. Since comparative cost data of the units are not available it is of utmost importance to make a careful study of the costs at these units and determine fair prices for these basic drugs, so that ultimately the 'formulations' made with these may be priced reasonably. Another reason for a rigid scrutiny of costs of these producers is to ensure that the 'formulators' outside the manufacturing firms of 'basic drugs' are not put to any significant disadvantage by a price disparity of basic drugs. The basic drug manufacturer has no doubt, an inherent advantage in the prices of his formulations *vis-a-vis* the formulator who has to purchase the basic drug and this appears inevitable, but an approach to the problem has been made with a view to obviating this anomaly, as far as practicable.

28.1.8. In regard to the other nine specified 'basic drugs' there are producers whose costs are comparable and the problem is therefore confined to an analysis of comparable data and fixation of prices by giving weightage to capacities installed, optimum utilisation of such capacities, material usage and their present prices, the level of expenses, capital related costs (i.e. depreciation), etc.

28.1.9. The terms of reference envisage examination and analysis of the following preliminary to the formulation of estimates of fair prices.

1. Capital outlay including plant and machinery in relation to (i) actual production (ii) potential capacity.
2. Amount spent on sales promotion through (i) advertisements (ii) distribution of free samples (iii) expenditure on sales staff (iv) publication of leaflets and literature and (v) other incentives and miscellaneous expenses.
3. Comparison of the cost arrived at as between the organised sector and the small scale units.
4. Cost of production including raw materials and intermediates and cost of containers and printing of labels.
5. Operational efficiencies of the processes.
6. Difference in prices of formulations when sold under brand names and common names and the prices quoted against Government tenders and general public.
7. Prices at which formulations are sold by manufacturers to Government *vis-a-vis* the prices at which bulk drugs manufactured by them are sold to other formulators.

Issues relating to items 5, 6 and 7 above have already been dealt with under Chapters 15, 24 and 25 respectively

Chapter 22 contains a discussion supported data of matters relating to item No 2 above The incidence of cost of raw materials and intermediates referred to in item 4 above has been indicated in the following cost analysis for each of the specified basic drugs and the relevant formulations The cost of packing including

details are to the extent these were available included in the Commission's estimates being sent separately In Chapter 30 comparison has been made as between the cost of production of the large scale units and that of the small scale units both for basic drugs as well as for formulation The relevant issues have been discussed in detail under each of the drugs and formulation for which comparative data are available

28 1 10 Capital outlay including plant and machinery is relevant for the purpose of calculation of depreciation as an item of cost and for allowing return on the employed capital It needs to be pointed out that some of the units which have been studied have composite activities and do not generally produce only those drugs or formulations which are under inquiry Those units also produce other drugs and formulations and in some cases they have also several other activities not relating to the production of pharmaceuticals Efforts were made in each case to isolate the specific assets for each product but where the plant and machinery were utilised for the manufacture of a number of products some of them being the subject of the inquiry and others not, and these were so inextricably involved that the items could not be separated certain technical estimates furnished by the units were with suitable modifications adopted As a result we have arrived at the net assets for the proportionate value of net assets relating only to the product under cost examination The second point that is contained in the reference of the Government is with regard to the actual production and potential capacity Once the value of the net assets relating to the product under inquiry has been arrived at and its capacity established the point to consider is whether any further reduction in this value would be justified on account of the fact that the entire installed capacity was not utilised On this question the past experience is not of much relevance since the future estimates are based on installed capacity related to domestic demand We have as far

as possible tried to adopt utilisation of capacity to he extent warranted by the actual installation which exist and the extent to which these can be worked with reference to future requirements. In most cases the estimates are based on almost full utilisation of capacity, in certain others, the installed capacity may not be fully utilised. It is however not possible to make any reductions in the value of the plant and machinery or exclude any item in the plant and machinery on the ground that there is likelihood of lack of full utilisation. For depreciation will inevitably take place and no reduction on the full notional depreciation which is allowed as an item of cost is possible, unless it can be established that the installation is cut of all proportion to the output. We have not observed any such over investment. Return has also to be provided in the case of manufacture of basic drugs on the net fixed assets (together with the working capital) which have been isolated for the particular proudct in question. In the case of formulations for reasons which have been explained later their cost of production has been adopted as the basis for allowing the rate of return and the capital outlay on machinery and plant does not therefore figure.

28.1.11. Allocation of selling overheads has been indicated separately in the cost of basic drugs and also that of formulations. It was not found practicable to separate the expenses under each of the items which constitute the total selling overheads since most companies do not maintain specific accounts for each separate item. While the actual costs show the totality of expenses incurred on the distribution of free samples, emoluments of sales staff, incentives, publication of leaflets and literature and advertisements, in working out the costs for the future we have in the case of basic drugs limited this element of cost to certain fixed rates. We have discussed at length the position as well as the incidence of a sales promotion in Chapter 22 on the basis of the Actual expenditure incurred we have reached the medium figure of 15 per cent which we consider fairly reasonable and the same rate has been adopted for working out the element of cost relating to sales promotion for formulations. Where however the actual expense incurred has been less no upward revision has been made. Basic drugs do not call for any special selling effort in as much as these are sold to manufacturers of formulations and the incidence has been restricted to 5 per cent only. Where the cost incurred was less for the actual period the actual rate was allowed in the uture estimates also.

28.1.12. Before we proceed to deal with the cost of production of each of the 18 basic drugs a few general observations with

regard to the elements of costs and the manner in which these have been worked out need to be made

28 1 13 **Material costs** — Material cost have generally been adopted on the basis of the costs incurred by the unit during the actual period of costing with such increases as were warranted by the increase in prices duly authenticated by the invoice of the latest purchases that had been made by the unit A between the actual period and the estimates for future the range of increases is as follows —

| Range | Number of cases |
|---|---|
| I *Increase* | |
| 1 up to 5% | 5 |
| 2 5% to 20% | [illegible] |
| 3 20% to 50% | 8 |
| 4 50% and above | 1 |
| | 24 |
| II Break even cases | [illegible] |
| III *Decrease* | |
| 2 7% to 10 5% | |
| TOTAL | [illegible] |

In the case of the same raw material consumed by different units we found a wide range of disparity which has already been indicated in Chapter 12 While it was not possible to adopt lowest rates, in several cases we have made suitable modifications where it was considered necessary to do so In the case of imported raw materials the rates at which the particular raw material has been purchased are bound to differ, depending upon the source from which licences for import were made available Some of the foreign markets are cheaper than others but it may always not be possible for all the units to purchase from the cheapest sources since the *availability of foreign exchange is distributed over a number of* countries Keeping this factor in view alterations in rates of imported material have been made only when the circumstances justified the same

28 1 14 **Usage factor** — We did not find any significant disparities in the usage factors of the same raw material for the

production of the same drug as between different units nor was there any occasion to notice any wide variations between the accepted usage factor and the usage factor claimed by the units. However, suitable modifications have been made where the usage factor was claimed at a rate substantially higher than so warranted by the chemical processes and reaction involved. Brief indications of the changes made, have been given under the individual items of drugs discussed. Closely related to the usage factor is also the factor of recoveries. We have given indications of the low recoveries wherever these were particularly noticeable. It has however not been possible to assume recoveries at significantly higher rates than have been obtained by the units concerned in the past.

28.1.15. **Wages and salaries.**—Normal additions to wages and salaries and grade increments have been included together with such additions as were necessitated on account of awards of labour tribunals. Where increase in staff has been justified as a result of adoption of higher production suitable additions have been made.

28.1.16. **Other conversion charges.**—Repairs, consumable stores, factory and administrative overheads have been adopted with appropriate adjustments wherever found necessary.

28.1.17. **Packing charges.**—Wherever packing charges have been allowed and shown separately these are for the material cost only since the labour and other charges for packing have been included under the respective elements of cost. It would have been desirable to isolate packing charges from other charges both in respect of material as well as other charges but it was not found possible to do so without the outlay of much additional labour and time. It would however be desirable in case any future cost study is undertaken to make this study and separate the packing charges from other costs even if it means more work.

28.1.18. **Royalty.**—Wherever royalty agreements exist appropriate quantums for different basic drugs or formulations as the case may be have been included.

28.1.19. **Selling expenses.**—We have discussed selling expenses in chapter 22 and have for the reasons already given adopted the maximum rate of 5 per cent for basic drugs and that of 15 per cent in the case of formulations. However, where the actual amount spent and claimed for the future is less we have allowed selling expenses at the existing or anticipated future rates.

Allocation of selling overheads is separately indicated in the cost of basic drugs and formulations It was found impracticable to separate the expenses under each of the items which constitute the total selling overhead as accounts in most of the companies are not maintained properly and data in respect of each of the item were therefore not available separately For instance, printing of labels, leaflets and literature etc are generally covered in the accounts under 'printing and stationery' which is mixed up with the overall stationery or printing charges Even some companies which had estimated these items within the gambit of total expenses could not be taken as factually representative The costing approach, therefore, had to be confined to the various expense heads as are reflected in the books of account and these item have been incorporated for cost purposes under selling As far as basic drugs are concerned, we feel that they do not call for any special selling effort in as much as the basic drug manufacturers sell their products to manufacturers of formulations and therefore the incidence of selling expense could be restricted to 5 per cent of the total cost only However, where the impact was less, the actual incidence has been allowed in the future estimates

28 1 20 **Depreciation.**—In our calculation of costs provision for depreciation has been made according to the income tax rates on the written down value of fixed assets The industry has however, argued that new research new processes and new products are being continuously developed with the result that the processes and products are liable to become rapidly out dated It has therefore been pressed that the rate of depreciation allowed under the Income tax Act is inadequate and that higher rates should be allowed In this connection it may be stated that the Income Tax Act provides a reasonable allowance for the exhaustion, wear and tear of property used in the trade or business including a reasonable allowance for obsolescence The calculation of depreciation is only notional and while it is possible that there may be a rapid rate of deterioration in the case of some plant and machinery, in others the value of net fixed assets may be greater than assumed, owing to lower incidence of actual deterioration Further, the depreciation funds recovered periodically are usually utilised either as working capital or for investment in securities outside the business or for further expansion and by that process also they earn a certain amount of return When the funds are used to run business as working capital, they are transformed into current assets, thereby reducing the need for current borrowing If however, the funds are used in securities,

they earn interest or dividends. If such returns are reinvested, the resources for replacement would be further augmented and would provide additional sums which can be utilised for financing replacement of worn-out assets. On the other hand, when the depreciation is utilised for expansion, further depreciation on the new plants is recovered through costs from the time the added machinery starts production and is also eligible for tax relief on account of development rebate. Thus over a period, the depreciation fund with the industry will be more than what is allowed under the Income-Tax Act. We are therefore unable to accede to the industry's request to provide for higher depreciation rates in our estimates of costs

28.1.21. **Cost of transmitted technology.**—It has been stated that foreign collaboration permits not only the right to work patents, know-how and other ancillary services but to a large extent it transmits advance technology and management practices which contribute to the development of the particular industry. In the long run it also contributes to decreasing the country's dependence on imports and helps to increase exports. In other words, the benefits available from collaborations are :

1. Right to work patents, know-how and ancillary services.
2. Contribution made to the development of industry by transmitted technology.
3. Help thus provided for reducing the dependence on imports and increasing exports.

While item No. 1 is paid for, no additions to cost or return are allowed for items 2 and 3.

The industry has also represented that the profits earned by a number of companies in India result from the fruits of research which are made available through a variety of collaboration agreements, and such expenditure is incurred in the country and not shown towards cost. It desires that a notional quantum of such costs should be adopted for purposes of arriving at fair ex-works prices.

28.1.22. Pfizer has argued that expenses incurred on behalf of the unit by the parent company for which no contribution is made should be adopted as an item of cost. These items of expenditure have been mentioned as follows :

1. Basic research & development.
2. Products & formulations development.

3 Technical assistance in the form of know how
4 Design engineering & construction services
5 Patents and trade marks
6 Training of technicians
7 Assistance in the local development of new products and processes
8 Training of key personnel in management techniques
9 Assistance in the improvement of quality control standard
10 Assistance in the improvement of production yields based on local conditions and using of local materials
11 Supply of clinical trial data obtained from different parts of the world in respect of each of the drugs
12 Supply of product promotion literature and aids from all parts of the world
13 Marketing techniques based on the experience gained in serveral other countries
14 Management control & techniques in the areas of administration and finance

It has been suggested that the expenses incurred by the parent company in the case of these would be equivalent to four per cent of the sales turnover and should be included

28 1 23 Our approach on this issue is that know how and research are paid for through royalty agreements and where there is equity participation, by profit sharing In the case of units which work as subsidiaries of larger foreign organisations their ability to function in this country and to prosper in competition with the rest of the indigenous industry in itself is the reward for the superior technology or know how which they bring with them No additional payment for the same would be warranted The existence of a market where investment can be made and profits secured is the reward for any contributions which are made by the parent organisation in the form of intangible costs

28 1 24 **Escalation for future rise in prices** — A plea has been entered that in view of inflationary tendencies future costs should contain an element of escalation based on past experience These assumptions, if made, would be hypothetical and may not ultimately be found correct We have therefore

avoided any conjectural increases in material costs for the future. On the other hand we have observed that the same raw materials have been procured by different manufacturers situated within the same area at different prices and the variation has been significant in certain cases. We expect that the manufacturers would try to locate, in future, sources which would make available raw materials at competitive prices. We have evaluated the material costs on the basis of the latest prices, in accordance with our usual practice and no provision of an escalation in the future costs was considered necessary.

28.1.25 **Return.**—Overall profitability of the industry according to the two samples *viz.* (a) of the units costed and (b) of most large units whose balance sheets were made available to us has been discussed in Chapter 27. In Chapter 31 we have further discussed the issue of the rate of return and have arrived at suitable rates which have been added to the cost of basic drugs as well as that of formulations.

28.1.26. **Bonus.**—The industry has argued that the payment of bonus is a long term contractual obligation which is allowed as a taxable expenditure for income-tax purposes and that it sees no justification for disallowing this in the computation of product costs. In support of this argument, it has stated that in a study conducted by the Indian Merchants' Chamber in collaboration with the Institute of Chartered Accountants, an observation has been made that legally as well as in the effect the entire concept of bonus has completely changed in recent years. In practice, it is no longer an *ex-gratia* payment dependent solely upon substantial profit, *i.e.*, profits made beyond reasonable expectation or beyond what is regarded as reasonable return. Bonus to exmployees is thus, in pracice, regarded by employees and Adjudicating Tribunals alike as an additional emolument legitimately forming part of the wage structure in an endeavour to raise the minimum fair wage to the level of living wage.

28.1.27. While there is some force in the above contention, we consider that bonus is an arrangement stipulated under the Bonus Act, for the purpose of sharing the total profits by the employees as well. The Act was the result of continued discontent between the employees and the Management because the employees felt that they had a right to a share in the profits of the company in so far as they had played a vital part in contributing to its profit earning capacity. Any payment made out of appropriation of profit cannot be considered as an element of cost. Further

under the Bonus Act, payment of bonus is conditional For new establishments will be required to pay bonus only for the accounting year in which the employer makes a profit from such establishment or from the sixth accounting year in which the products manufactured in the establishment are sold, whichever is either Again, if there is no surplus, and there is no amount or sufficient amount carried forward for the purpose of payment of the minimum bonus laid down at 4 per cent of the salary or Rs 40 whichever is higher, then such amount or the deficiency will be carried over for being set off in the succeeding accounting year It is, therefore, clear that bonus is payable only if there is a profit and though a minimum of 4 per cent is payable even if there is no profit in a particular year that can be treated only as an advance to be adjusted in subsequent years when profits are available However, the bonus which aims at increasing the productivity of labour like the production incentive bonus can be admitted by us as an item of cost But the bonus payable under the Bonus Act which does not contribute to productivity but is only an appropriation of profit should, in our opinion be kept out of cost It will at the same time be wrong to assume that we do not give any consideration for the payment of bonus merely because its incidence is not included in cost Although we do not consider it as an item of cost we recognise the liability of the company so far as payment of bonus (under the Bonus Act) is concerned by adding an appropriate amount in the return allowed to the industry So far as the final price is concerned it makes no difference whether the incidence of bonus payment is included in cost or in the return added to the cost

28 1 28 Each of the basic drugs referred to us for inquiry has been dealt with separately in the following paragraphs —

28 2 **"Vitamin A—Palmitate"**

28 2 1 There are only two firms *viz*, Glaxo Laboratories (India) Pvt Ltd, and Roche Products Ltd, both of Bombay which produce 'Vitamin A—Palmitate' in the country from lemon grass oil These companies have good costing systems and costs have been examined for the year ended 30th June 1967 in the case of Glaxo Labs and 31st December 1967 in the case of Roche Products Except for a few raw materials, other materials used in the production are not comparable in these units Roche Products produces Vitamin Acetate Crystalline, and thereafter Vitamin A Palmitate (bulk) and converts it into Vitamin A Palmitate commercial Glaxo Labs exports a large quantity of Beta Iopone and only a small portion is utilised in the production of Vitamin

A Palmitate, *viz.*, about 10 per cent. Glaxo Lbs. produced in the past certain other basic drugs also which have since been given up. Formulations from these selected basic drugs as well as other basic drugs are done at both these units ; besides, Glaxo Labs. has a department for food products.

28.2.2. During the costed period Glaxo Labs. produced 4.3 m.m.u. and Roche Products 14.3 m.m.u. of Vitamin 'A' Palmitate. The capacity utilised by Glaxo Labs. was very low. In developing the estimates for future, we have adopted a production level for each company of 15 m.m.u. of Vitamin 'A' Palmitate in consultation with the Assessors and on the basis of the demand, off-take, etc. both as basic drug and for use in formulations. The estimates are summarised below :—

Per 1000 m.i.u.

| | *Glaxo* Labs. | *Roche* Products |
|---|---|---|
| | Rs. | Rs. |
| (a) Materials | 119·30 | 102·26 |
| (b) Conversion charges | 200·71 | 195·27 |
| (c) Total factory cost (Bulk) | 320·01 | 297·53 |
| (d) Packing | 4·26 | 2·88 |
| (e) Royalty | 24·43 | .. |
| (f) Research | .. | .. |
| (g) Selling expenses | 16·00 | 15·12 |
| (h) Total cost | 364·70 | 315·53 |
| (i) Return | 36·06 | 66·02 |
| (j) Fair *ex*-works price | 400·76 | 381·55 |
| (k) Existing selling price | 564·06 | 546·42 |

28.2.3. **Materials.**—The material costs are fairly comparable and the minor difference between the two companies in this item is due to dissimilar materials being used as the processes of manufacture are different. By and large, the material costs may not be viewed as unreasonable in the present circumstances.

28.2.4. **Conversion charges.**—The conversion charges are comparable as the production is practically taken at the same level for these two units.

28 2 5 **Packing.**—During 1966, Roche Products had not made any sale of this basic drug as such to the market but had consumed it in the production of its own formulations The company has now entered the market for sale of Vitamin A in bulk On the other hand, Glaxo Labs has withdrawn its sale of bulk drug from the market and has since started concentrating on the formulations only The packing materials cost for Roche Products has been estimated at Rs 2 88 and for Glaxo at Rs 4 26 per 1000 m i u depending on the sources of purchase and the type of packing materials used

28 2 6 **Royalty.**—This is applicable only to Glaxo Labs and has been allowed at Rs 24 43 per 1000 m i u Roche Products does not pay any royalty

28 2 7 **Research.**—No provision has been made under this head as there was no specific expenditure for this product in both the companies

28 2 8 ***Selling expenses.***—*This is estimated* at 5 per cent of the factory cost

28 2 9 **Return.**—For reasons stated in Chapter 31 return has been provided at 15 per cent on capital employed

28 2 10 **Fair ex-works price.**—For fixing the fair price for Vitamin A (Palmitate), after discussion with the Assessors we have come to the conclusion that the weighted average cost of Glaxo Labs, and Roche Products should be taken On this basis, the price works out to Rs 391 per 1000 m i u

28 3 **Vitamin B12—Crystalline**

28 3 1 *Vitamin B12 is exclusively manufactured in India,* by Merck Sharp & Dohme India Ltd, at its factory in Bhandup, Bombay A major part of the share capital (60 per cent) is held by the foreign parent company, Merck & Company Inc., U S A Besides, Vitamin B12 and its formulations, small quantities of Prednisolone was also produced in the past but this has since been given up

28 3 2 The company has a good costing system The actual costs *for the* year ended *30th* November *1966* were examined During that year the company produced 40 178 kgs of Vitamin B12 [illegible]
Of [illegible]
Vit [illegible]
cobalamin In the estimate for future, the optimum production

level has been adopted at 45 kgs. per annum in consultation with the Assessors assuming the same pattern of sale as in the past.

28.3.3. The estimate of costs for future based on 45 kgs. per annum of Vitamin B12 Crystalline is given below :—

| | | Estimate for future |
|---|---|---|
| | | Rs. Gramme |
| (a) | Materials | 33·08 |
| (b) | Conversion charges | 55·48 |
| (c) | Total factory cost (Bulk) | 88·56 |
| (d) | Packing | 0.79 |
| (e) | Royalty and research | — |
| (f) | Selling expenses | 4.43 |
| (g) | Total cost | 93·78 |
| (h) | Return | 20.06 |
| (i) | Fair *ex*-work price | 113·84 |
| (j) | Existing selling price | 119.20 |

28.3.4. **Materials.**—The total material costs have been assessed at Rs. 33.08 per gramme of Vitamin B12 for future of which 77.3 per cent represents the imported items.

28.3.5. **Conversion charges.**—The total conversion charges estimated for future amount to Rs. 55.48 per gramme.

28.3.6. **Packing cost** has been estimated at Rs. 0.79 per gramme.

28.3.7. **Royalty and Research.**—There is neither royalty payment nor research expenditure for this basic drug.

28.3.8. **Selling expenses.**—The company produces Vitamin B12 both for its own consumption in formulations as well as for sale as such to outside parties. Selling expenses have been provided at 5 per cent of the factory cost, *viz.* Rs. 4.43 per gramme.

28.3.9. **Return.**—We have provided return at 15 per cent on capital employed, *viz.*, Rs. 20.06 per gramme.

28.4. **Vitamin 'C'**

28.4.1. Vitamin 'C' is produced only by one company *viz.*, Sarabhai Merck Ltd., under a collaboration agreement with Messrs. L. Merck A. G., West Germany, for a period of 20 years from May 1958. No royalty, however, is contemplated in the agreement.

28 4 2 The company has a fairly good system of costing and costs of manufacture of Vitamin C were examined for the year ended 31st March 1967 The paid up capital was Rs 16 5 lakhs and the volume of turnover for the costed year was Rs 233 4 lakhs for all its products No formulations however, are made from the basic drug

28 4 3 The licensed capacity of Sarabhai Merck is for a production of 120 tonnes of Vitamin C per annum During 1966 67 the company exceeded this level, and produced 135 tonnes The Assessors were of the view that the existing plant is capable of giving a larger output *viz*, 180 tonnes and therefore the optimum production level of 160 tonnes per annum *i e* 90 per cent of the capacity) could be adopted for cost assessment purposes The main reason why a higher production could not be attained in the earlier years was stated to be that large imports were then allowed into the country which resulted in the curtailment of indigenous production Since there is a ban on imports now, it should be possible for the company to achieve full utilisation of capacity

28 4 4 Based on a production of 160 tonnes of Vitamin C per annum, our estimate of future has been built up as shown below —

| Items | Estimate (future) Rs /Kg |
|---|---|
| (a) Materials | 31 55 |
| (b) Conversion charges | 33 44 |
| (c) Total factory cost (Bulk) | 64 99 |
| (d) Packing | 0 51 |
| (e) Royalty | |
| (f) Research | 0 32 |
| (g) Selling expenses | 0 15 |
| (h) Total | 65 97 |
| (i) Return | 6 73 |
| (j) Fair *ex* works price | 7  70 |
| (k) Existing selling price | 73 50 |

The surplus margin available is small

28 4 5 **Materials** —Five imported materials and 31 indigenous chemicals are used in producing Vitamin 'C The value of imported materials constitutes about 39 per cent of which Acetone

alone works out to about 31.4 per cent. Two major indigenous items *viz.*, Dextrose and Caustic Lye account for about 47.8 per cent in value of the raw material.

28.4.6. **Conversion charges.**—The conversion charges have been estimated at Rs. 33.44 per kg. after taking into account the increased production for future. The recovery of Vitamin C from Pure Sorbitol is about 36 per cent which is very low in comparison to the 60 per cent recoveries available to units in Europe.

28.4.7. **Packing.**—Vitamin C is sold in bags for bulk and in containers for small quantities. Packing cost has been estimated at Re. 0.51 per kg. for bulk.

28.4.8. **Research and Development.**—A small laboratory is maintained where research on a minor scale is carried out. This cannot be viewed as in the nature of regular research for the development of the product in future. A sum of Rs. 0.47 lakh was spent in 1966/67 and after minor adjustments the expenditure under the above head has been estimated at Rs. 0.32 per kg. for future.

28.4.9. **Selling expenses.**—The total expenditure in the sales department during 1966-67 was about Rs. 5.03 lakhs and this related mostly to salaries and wages. As practically the entire production is given to another company within the same group of industries which may not need a selling organisation of this magnitude the selling expenditure appears to be excessive. A provision of Rs. 2,000 per month should, in our opinion be adequate and this would work out to Re. 0.15 per kg.

28.4.10. **Return.**—A 15 per cent return on capital employed has been provided which works out to Rs. 6.73 per kg. Since the commencement of business in 1958-59, the company had been continuously accumulating losses which reached a peak in 1963-64 when it stood at Rs. 81.12 lakhs. Thereafter both production and sales improved and the losses came down to Rs. 13.20 lakhs in 1966-67. But subsequently the position deteriorated because of imports of Vitamin 'C' by other parties thereby retarding the sales potentialities of Sarabhai Merck. The tide should turn in favour of this company because of the present ban on imports of Vitamin 'C'.

28.5. **Sulphadiazine**

28.5.1. May & Baker Ltd., Bombay and Atul Products Ltd., Bulsar had been manufacturing this basic drug. Since the

latter discontinued its regular production in 1967, May & Baker was selected for costing of sulphadiazine as well as its formulations

28 5 2 May & Baker has an installed capacity of 210 tonnes of sulpha drugs per annum but it had to limit its production far below its capacity owing to inadequate demand Even during the costed period the production was only 95 5 tonnes which was about 45 per cent of the installed capacity This heavy underutilisation of capacity has been explained by the producer as due to heavy imports of foreign sulpha drugs The import of sulphadiazine was allowed for the reason that acetyl sulphadiazine, the penultimate intermediate from which it is manufactured, was being imported and it was found uneconomical to import the finished product Now that this unit manufactures the drug from basic materials the necessity of import of high level intermediates at a high cost will be obviated According to the Government import control policy there is a ban on imports of sulphadiazine and this should stimulate the demand for the domestic sulphadiazine and provide an incentive to the company to step up its production In view of this it would not be unreasonable to adopt the optimum capacity utilisation of about 190 tonnes per annum (i e 90 per cent of the capacity) Of this about 90 tonnes will be in the form of sulphadiazine

28 5 3 The estimates of future cost and price based on the production of 90 tonnes per annum of sulphadiazine are given below

| | Estimate |
|---|---|
| | Rs /Kg |
| (a) Materials | 41 50 |
| (b) Conversion charges | 11 51 |
| (c) Total factory cost | 53 01 |
| (d Packing | 1 25 |
| (e) Royalty and research | |
| (f) Selling expenses | |
| (g) Total cost | 54 26 |
| (h) Return | 4 63 |
| (i) Fair ex works price | 58 89 |
| (j) Existing price | No price fixed |

28.5.4. **Materials.**—The company uses four imported and 17 indigenous chemicals in the manufacture of sulphadiazine. The imported materials account for about 77.6 per cent of the total materials cost of which 53.7 per cent relate to Aminodiazine and 17.9 per cent to Acetanilide. The major indigenous material is Chlorosulphonic Acid which constitutes 14.4 per cent of the total material cost.

28.5.5. **Conversion charges.**—These have been estimated at Rs. 11.51 per kg. indicating a reduction of about 34 per cent for an increase in production of about 26 per cent.

28.5.6. **Packing.**—Since the company does not sell sulphadiazine as such but consumes it exclusively in the manufacture of its own formulations, the cost of packing materials used for storage only has been included in the estimate. The amount allowed is Rs. 1.25 per kg.

28.5.7. **Research and Development.**—No expenditure has been specifically incurred for the development of this basic drug but the expenditure on the maintenance of the laboratory has been included under overheads incorporated in conversion charges.

28.5.8. **Royalty.**—No royalty is payable in respect of sulphadiazine.

28.5.9. **Selling expenses.**—Since this basic drug is not sold, the question of providing any selling expenses does not arise.

28.5.10. **Return.**—This has been provided at 15 per cent on the employed capital which works out to Rs. 4.63 per kg.

28.5.11. **Fair selling price.**—Although the company does not market this product, for the purpose of working out the costs of formulations we have decided to adopt the price estimated for this unit, namely Rs. 58.89 per kg.

28.6 **Penicillin**

28.6.1. Four units including I.D.P.L., Rishikesh, have been licensed to manufacture Penicillin in the country. The other three units and the capacities licensed to them are : Hindustan Antibiotics Ltd., Pimpri—84 m.m.u.; Alembic Chemical Works Co. Ltd., Baroda 20 m.m.u.; and Standard Pharmaceuticals Ltd., Calcutta—20 m.m.u. All the three units were originally selected by us for assessment of cost. Subsequently, however on the advice of the Assessors, Standard Pharmaceuticals Ltd., was dropped. Although no orthodox costing system exists in both these units, data were available to develop cost on a fairly reasonable basis. Cost of manufacture were assessed for the year ended

31st March 1967 at Hindustan Antibiotics and the year ended 31st December 1967 at Alembic Chemical

28 6 2 **Hindustan Antibiotics.**—This is an antibiotic project set up in India under the Joint Plan of Operations between the Government of India and the World Health Organisation (WHO) and the United Nations International Children Emergency Fund (UNICEF) It was mentioned that the Strain which was developed in its own laboratory and is now being used is very much lower in cost than envisaged in the original project report The entire share holdings of the company belong to the Government of India and the present capital amount to Rs 247 26 lakhs It has been paying dividend consistently at 10 per cent The company has a comparatively larger number of Reserve Accounts than what is normally seen in any private owned concern

28 6 3 **Alembic Chemical.**—The company, as its name connotes, was originally set up for manufacture of Alcohol Its Penicillin plant was erected in 1960 and it went into production in the same year The share capital as on 31st December 1966 stood at Rs 207 66 lakhs Out of the total sales turnover in 1966 of Rs 626 59 lakhs, Penicillin (bulk) accounted for Rs 78 34 lakhs representing 12 5 per cent of total sales turnover

28 6 4 **Production.**—Production at Hindustan Antibiotic during 1966 67 was 65 73 m m u indicating a utilisation capacity of 78 per cent, while in Alembic Chemical the production during the costed year 1967 was 25 85 m m u with a capacity utilisation of 52 per cent Future production of these units has been estimated at 72 m m u and 30 m m u per year respectively Although we are aware that Alembic Chemical produced about 40 m m u in 1966, we have adopted a lower capacity utilisation for future as the company considers it difficult to market Penicillin in excess of 30 m m u annually According to the company the total capacity for Penicillin licensed in the country is far in excess of domestic requirements and therefore, if the optimum capacity is realised by each of the licensed units, the country will be faced with an over production of this basic drug As the international prices of Penicillin are comparatively much lower, it will not be possible to find an outlet in the export market for the excess production unless Government subsidise the industry for losses incurred on exports Further, unlike Hindustan Antibiotics, Alembic Chemical does not produce streptomycin and so it does not have the benefit of tying up sales of penicillin with streptomycin which is said to be the normal trade practice

28.6.5. **Cost of production.**—Based on the above levels of output, estimates of costs have been prepared for the future and are set out below :

*Estimated cost of production and Fair ex-works price of penicillin*

| | Potassium Pencillin 'G' | | Procaine Penicillin | | Sodium Penicillin 'G' | | Potassium Penicillin 'V' | |
|---|---|---|---|---|---|---|---|---|
| | Hindustan Antibio-tics | Alembic Chemical | Hindustan Antibio-tics | Alembic Chemical | Hindustan Antibio-tics | Alembic Chemical | Hindustan Antibio-tics | Alembic Chemical |
| | Rs./mu | Rs./mu | Rs./mu | Rs./mu | Rs./mu | Rs./mu. | Rs./mu | Rs./mu |
| (a) Materials | 0·157 | 0·180 | 0·152 | 0·185 | 0·201 | 0·188 | 0·244 | .. |
| (b) Conversion charges | 0·125 | 0·242 | 0·120 | 0·240 | 0·121 | 0·259 | 0·188 | .. |
| (c) Total factory cost | 0·282 | 0·422 | 0·272 | 0·425 | 0·322 | 0·447 | 0·432 | .. |
| (d) Packing | 0·001 | 0·007 | 0·001 | 0·007 | 0·001 | 0·007 | 0·001 | .. |
| (e) Royalty | .. | .. | .. | .. | .. | .. | .. | .. |
| (f) Research | 0·011 | 0·020 | 0·010 | 0·021 | 0·013 | 0·021 | 0·012 | .. |
| (g) Selling expenses | 0·001 | 0·022 | 0·001 | 0·022 | 0·001 | 0·021 | 0·001 | .. |
| (h) Total cost | 0·295 | 0·471 | 0·284 | 0·475 | 0·337 | 0·496 | 0·446 | .. |
| (i) Return | 0·056 | 0·072 | 0·052 | 0·070 | 0·062 | 0·074 | 0·091 | .. |
| (j) Fair-ex-works price | 0·351 | 0·543 | 0·336 | 0·545 | 0·399 | 0·570 | [illegible] | .. |
| (k) Existing selling price | 0·500 | 0·500 | 0·500 | [illegible] | | | | .. |

Penicillin bulk is sold in the market under different categories So far as costed units are concerned, Sodium Penicillin'G', Potassium Penicillin 'G', Procaine Penicillin are manufactured by both Potassium Penicillin 'V' is, however, manufactured by only Hindustan Antibiotics

28 6 6. **Materials**

28 6 6 1 In the case of Hindustan Antibiotics, the cost of materials will remain prac tically the same in future also for each category of Penicillin This is because the company has fixed standards for quantity per unit of the product and during the actual period very little variation was noticed between the standard and the actual For the purpose of estimates the total cost of materials has been arrived at on the basis of the standard usage at the latest procurement rate, both for imported and indigenous materials No additional provision is considered necessary

28 6 6 2 Alembic Chemical does not have any standard consumption factor and the material usage for the future has been adopted on the basis of actuals because the company has emphasised that there is no further scope for economy over the actual consumption During the costed period the consumption efficiency was in the range of 80 per cent to 90 per cent related to input

28 6 7 **Conversion cost**

28 6 7 1 While estimating the future conversion cost for Hindustan Antibiotics, account has been taken of the revision of the scales of wages and salaries Provision has also been made for planned additions to labour and staff to achieve higher output, as well as other known items of additional expense like 'insurance premia' Additions to plant and equipment and also replace ment of such items as have been approved by the Board of Directors have been admitted for the purpose of depreciation calculation The overall effect on the total conversion cost is that it does not ref lect a substantial economy in Hindustan Antibiotics in spite of the higher output of different items assumed for the next three years

28 6 7 2 In Alembic Chemical, as the production level is a restrictive factor, no addition to labour, staff or plant and equipment has been admitted The conversion cost has, therefore shown a decline for the higher level of production adopted for future

28.6.8. **Packing.**—Cost of packing is slightly higher in Alembic Chemical.

28.6.9. **Royalty and Research.**—No royalty is payable by either of the companies. Expenses on research between the two companies show variation except in the case of Potassium Penicillin. Alembic Chemical has only one basic product, *viz.* Penicillin, and a larger proportion of research expenses has therefore been allocated to Penicillin. But in Hindustan Antibiotics, Penicillin constitutes one of the basic drugs manufactured by the company. It, therefore, bears only the corresponding share of the total research expenses incurred at that unit.

28.6.10. **Selling.**—The selling arrangement of Alembic Chemical has undergone a radical change with effect from 1st January 1967. The company has taken over the sales campaign by setting up 27 branches throughout the country. Necessary adjustments to selling expenses have been made. In Hindustan Antibiotics, however, the selling activities are mainly watched by a department in the Head Office at Pimpri.

28.6.11. **Return.**—This has been provided at 15 per cent on employed capital.

28.6.12. **Bulk Price.**—As regards bulk-price, we consider that the estimated fair price for Hindustan Antibiotics should be adopted.

### 28.7. Streptomycin Sulphate

28.7.1. Licences to undertake manufacture of Streptomycin Sulphate were issued to three companies, namely, I.D.P.L., Rishikesh, Hindustan Antibiotics Ltd., Pimpri and Synbiotics Ltd., Baroda. Of these, I.D.P.L. has only installed the capacity, and is still at the stage of experimental production while the other two have already gone into production and we have selected them for cost study. As stated earlier, Hindustan Antibiotics does not have a proper costing system, but data were available to develop costs on a fairly reasonable basis. On the other hand, Synbiotics has a good system of accounts. Cost data were examined for the year 1966-67 at both the companies.

28.7.2.1. Hindustan Antibiotics has collaboration with Merck and Co. of U.S.A. for setting up the Streptomycin plant. The licensed capacity of the plant is 90,000 kgs. The company has already achieved an output of 7,000 kgs. per month, equivalent to 84,000 kgs. a year. It has applied to Government for expansion

of its capacity to 160,000 kgs per annum but Government have postponed consideration of the application for the time being Production has been estimated at the optimum capacity of 80,000 kgs per annum

28 7 2 2 It may be pointed out that even though the company anticipated that its cost of production of Streptomycin Sulphate will not be less than Rs 300 per kg it retained the selling price at Rs 175 per kg until 1st October 1965, on the expectation that when the plant was doubled up, the resultant economy will bring down the cost of production to around Rs 175 per kg This however, has not been achieved primarily because the cost of materials kept on increasing Losses incurred on sales of Streptomycin were, however, recovered through sales of Penicillin by loading them on the selling price of the latter Effective from 24th January 1967, Government increased the selling price of Streptomycin (bulk) to Rs 295 per kg after examination of the cost by the Ministry of Finance Government also paid to the company an amount of Rs 12 73 lakhs being difference between the fair and actual selling prices of Streptomycin for the period prior to the revision of the selling price

28 7 3 1 Synbiotics was formed in December 1961 in financial collaboration with Karamchand Premchand Pvt Ltd and Olin Mathieson Chemical Corporation of U S A It does not have to pay any royalty to its foreign collaborators as they have a participation in the equity capital The paid up capital as on 31st March 1967 was Rs 75·00 lakhs The total amount of loans outstanding as on the same date was Rs 149 40 lakhs of which Rs 134 40 lakhs was obtained from the Agency for International Development and Rs 15 00 lakhs from the Chemical Bank New York Trust Co Total sales realisation during 1966 67 amounted to Rs 199 27 lakhs which included Rs 6 79 lakhs on account of subsidy received from Government under Streptomycin account Sales realisation on account of Streptomycin amounted to Rs 37 86 lakhs representing about 19 per cent of the total realisation

28 7 3 2 The installed capacity at Synbiotics is 40,000 kgs per annum which is also the licensed capacity During 1966-67, production of Streptomycin Sulphate was 39,090 kgs Future production has been assumed at 50 000 kgs i e, 25 per cent higher than the licensed capacity which, we understand is permissible under the Industries (Development & Regulation) Act, 1951

28.7.4. A summary of the future costs and prices of Streptomycin in respect of both the companies, estimated on the production levels mentioned above, is given in the following Table :

| | Hindustan Antibiotics | Synbiotics |
|---|---|---|
| | Rs./Kg. | Rs./Kg. |
| (a) Materials | 182·14 | 132·72 |
| (b) Conversion charges | 110·81 | 113·79 |
| (c) Total Factory Cost | 292·95 | 246·51 |
| (d) Packing | 0·96 | .. |
| (e) Royalty | 5·60 | .. |
| (f) Research | 2·18 | .. |
| (g) Selling expenses | 1·11 | .. |
| (h) Total Cost | 302·80 | 246·51 |
| (i) Return | 68·84 | 37·99 |
| (j) Fair *ex*-works price | 371·64 | 284·50 |
| (k) Existing selling price | 295·00 | 295·00 |

28.7.5. **Materials.**—The total material cost estimated at Rs. 182.14 per kg. for Hindustan antibiotics shows an increase of 29 per cent over the actuals. The costs are not, however, strictly comparable because during the costed period, as a result of processing difficulties, 6929 kgs. of Streptomycin had to be recrystallised. Expenses could not be itemised on a scientific basis. It would be observed that the cost of raw materials in the case of Hindustan Antibiotics is about 37 per cent higher than that of Synbiotics. Since the processes adopted by the two units are dissimilar it was not possible to equate the cost of the higher cost unit with that of the lower cost unit or to pinpoint in the cost analysis items either of usage or rates where higher costs may be evident. We tried with the help of the Assessors to investigate into the scientific basis to the higher material cost of Hindustan Antibiotics but could not reach any satisfactory conclusions. We have therefore shown in the table materials cost as claimed by the unit. These high material costs are however not significant since we have decided to adopt the lower of the two prices in the expectation that Hindustan Antibiotics will try to reduce the cost of materials or that of conversion in order to reach a cost of production at a level similar to that of the other unit. In Synbiotics, increases were evident in the costs of both imported and

indigenous materials as well as in the consumption factor of most of the materials Although the total material cost will increase in the future by 47 per cent, the proportion of the value of the materials obtained locally and by imports will remain fairly steady

28 7 6 **Conversion charges**—While for a production increase of 21 per cent in Hindustan Antibiotics, the conversion cost will come down by 0 7 per cent in Synbiotics a production increase of 26 per cent will result in reducing the conversion cost by 15 per cent During the costed period the latter company obtained its supply of power from Gujarat Electricity Supply Board Consequent upon the increase in the l ad of agricultural lift irrigation as well as some plant difficulties the Board imposed a cut of 15 per cent in the power load during peak hours The 'Common Services Department' of the company has since set up its own diesel operated generating set to make up for the shortfall of power requirement While electricity from grid costs 10 to 11 paise per KWH the cost of self generated power works out to 20 paise per KWH We are informed that the present difficult situation in regard to power supply by the Gujarat Electricity Supply Board is likely to continue for the next few years We have therefore adjusted the cost of power in Synbiotics after taking into account the fact that the bulk power will be purchased and own generated power will be used to the extent the supply falls short of the total requirement

28 7 7 **Packing**—The cost of packing material for future has been estimated for Hindustan Antibiotics at Re 0 96 per Kg Synbiotics does not incur any expenses under this account as normally it transfers the entire production to its sister concern in returnable containers

28 7 8 **Royalty.**—Royalty is payable by Hindustan Antibiotics to Merck & Co , U S A , on the net sale proceeds of bulk Streptomycin and Streptomycin content in formulations It is payable at varying rates *viz* , 2½ per cent on the first 45 tonnes, 2 per cent on the next 25 tonnes and 1½ per cent on the balance of the sales made in India If any sales are made outside India, royalty would be payable at 5 per cent In the case of Synbiotics royalty is payable to Sarabhai Chemicals on Streptomycin at 10 per cent of the prevailing selling price, notwithstanding the fact that Olin Mathiesen Chemical Corpn which is the collaborator for the manufacture of Streptomycin This organisation alone would be entitled to royalty, if any, but it has equity participation, profits from which take the place of royalty There is no technical assistance, know-how or other forms of collaboration provided

by Sarabhai Chemicals which may render payment of this royalty justifiable. Though this payment has been termed as "royalty" it is in fact in the nature of a profit sharing arrangement which becomes a discount on sales to the extent these are made to Sarabhai Chemicals. It is open to the unit therefore to make these payments from its own profit and it cannot be considered as an item of cost, since the benefit accruing to the manufacturing unit in return of this payment is not apparent. We have therefore excluded this item from the estimated future cost.

28.7.9. **Research.**—Hindustan Antibiotics maintains a well-equipped and modern research centre. The running cost of the centre is compiled separately. It identifies and allocates the shares of expenses on research and development to the concerned products and then sets off the balance against the profits. The company proposes to allocate a sum of Rs. 11,81,340, *i.e.* Rs. 11 81 per kg. on account of research expenses during the next three years. We have, however, admitted the research expenditure at the rate incurred during the costed period, *i.e.* Rs. 2.18 per kg. No research expenses are incurred by Synbiotics. The unit forms a part of the Sarabhai group of industries, which maintains Central Research Institute for the entire group. No contribution towards research has so far been made by Synbiotics. Nor, does it propose to make any contribution in the future.

28.7.10. **Selling expenses.**—The incidence of selling expenses allocable to Streptomycin at Hindustan Antibiotics has been estimated at Rs. 1.11 per kg. The selling department of the company is being expanded and distinction has been made between the marketing costs and selling overheads. As regards Synbiotics, no selling expenses are involved as its products are transferred to its sister concern Sarabhai Chemicals.

28.7.11. **Return.**—Return has been allowed at 15 per cent on capital employed.

28.7.12. **Bulk Prices.**—We have come to the conclusion that it would be reasonable to adopt the lower price of the two units. The bulk price thus works out to Rs. 284.50 which may be rounded to Rs. 285 per kg.

28.8. **Chloramphenicol**

28.8.1. Licences for manufacturing Chloramphenicol indigenously were issued to five companies, of which only three have installed capacities. Of these we have selected two companies for cost study, *viz.*, Boehringer-Knoll Ltd. and Parke-Davis (India) Ltd., both of Bombay, as the third company, Mac Laboratories

Ltd , Bombay did not produce this drug during the period January-June 1967 Both these companies have a good system of cost accounting and costs were examined for the year ended 30th April 1967 in respect of Boehringer-Knoll and the year ended 30th November 1966 in respect of Parke-Davis

28 8 2 Boehringer-Knoll has an installed capacity of 12 tonnes per annum for this drug During 1966 67 the quantity in processing was 12 885 tonnes and Chloramphenicol produced as a finished product was 9 885 tonnes (i e 78 per cent of capacity) besides a large quantity in process as semi-finished The company has since expanded its capacity by additions to plant and machinery, where it proposes to produce 22 tonnes per annum in future This level has been adopted in our estimates of future cost The factory does not formulate but on its behalf, formulations are prepared either by Rallies India Ltd (TCF Division, Bombay) or Capsulation Service Private Ltd , Bombay on loan licences for which Boehringer-Knoll pays service charges for *conversion into formulations*

28 8 3 Parke-Davis has an installed capacity of 10 tonnes per annum During the costed year it manufactured 11 20 tonnes of Chloramphemocal which was 12 per cent higher than the capacity

28 8 4 The Assessors have advised us that Parke-Davis will be switching over to the process of manufacture adopted by Boehringer-Knoll We have therefore decided to base the future prices on the working results of Boehringer-Knoll A summary of our estimates of future costs and prices is given below

| | Rs /Kg |
|---|---|
| (a) Materials | 146 00 |
| (b) Conversion charges | 164 69 |
| (c) Total factory cost | 310 69 |
| (d) Packing | — |
| (e) Royalty | — |
| (f) Research | — |
| (g) Selling expenses | — |
| (h) Total cost | 310·69 |
| (i) Return | 46 97 |
| (j) Fair ex works price | |
| (k) Existing selling price | |

28.8.5. **Materials.**—Of the 11 imported chemicals used by Boehringer-Knoll during 1966-67 it expects to procure four from indigenous sources in future. Consequently, in our estimates we have included the costs of seven imported and 32 indigenous materials of the aggregate value of Rs. 146 per kg. Of this total material cost, 34.9 per cent is accounted for by the imported materials and the balance of 65.1 per cent by the indigenous ones.

28.8.6. **Conversion charges.**—They have been provided at Rs. 164.69 per kg. for a production rise of 71 per cent the reduction in the conversion cost is about 12 per cent.

28.8.7. **Packing, Royalty, Research and Selling expenses.**—No expenditure is incurred in respect of these items.

28.8.8. **Return.**—The provision for return has been made at 15 per cent on employed capital which works out to Rs. 46.97 per kg.

**28.9. Tetracycline Hydrochloride**

28.9.1. In addition to I.D.P.L. four other companies were licensed to manufacture Tetracyclines in the country. These are Cyanamid India Ltd., Pfizer Ltd., Synbiotics Ltd., and Hindustan Antibiotics Ltd. The last named company has suspended production of this drug. Three units *viz.*, Cyanamid, Pfizer and Synbiotics were selected for cost study. All the three companies have good systems of cost accounting. Costs of production have been examined for the year 1965-66 for Cyanamid and Pfizer and for 1966-67 for Synbiotics.

**28.9.2. Capacity**

28.9.2.1. The installed capacity of Cyanamid is 10 tonnes of Tetracyclines, of which the production of Tetracycline (Hcl) during 1965-66 was 1888.7 kgs. It was mentioned that utilisation of capacity of Tetracyclines is to be reckoned in terms of the number of fermentators harvested during the year. It is understood that during 1965-66, the capacity was fully utilised. Out of 100 fermentators for future production 30 have been allotted for harvesting Tetracycline (Hcl), which will give an estimated output of 2310 kgs. of Tetracycline (Hcl).

28.9.2.2. Pfizer manufactures this product at its Chandigarh plant whose present installed capacity is 10,000 kgs. per annum. It is undergoing expansion raising its capacity to 14,000 kgs.,

by 1968 69 The capacity is for the combined production of Tetracycline and Oxytetracycline Production during 1965 66 was, however, 8,900 kgs Future production has been estimated at 12,300 kgs per annum

28 9 2 3 As regards Synbiotics, Government have not stipulated any limit for the manufacture of Tetracycline and have left it to the company to produce any quantity without asking for foreign equipment It raised its Tetracycline capacity from 4,000 to 6,000 kgs per annum on three shift in April 1967 Production during 1966 67 was 4,701 kgs The plant of the company is a multi purpose plant for making antibiotics wherein the production of Tetracycline and other antibiotics like Streptomycin could be adjutsed according to requirement Actually, during 1967 68 the company expects to manufacture about 948 kgs of Tetracycline (Hcl) and about 61,000 kgs of Streptomycin In the light of anticipated product mix, future production of Tetracycline (Hcl) has been assumed at 5,100 kgs per annum

28 9 3 Estimates of future costs have been developed on the basis of the above levels of production and are set out in the following table

| | Cyanamid Rs /Kg | Pfizer Rs /Kg | Synbiotics Rs /Kg |
|---|---|---|---|
| (a) Materials . . . | 313 12 | 167 59 | 392 53 |
| (b) Conversion costs . . | 303 28 | 538 51 | 348 14 |
| (c) Total factory cost . . . | 616 40 | 706 10 | 740 67 |
| (d) Packing . . . | | | |
| (e) Royalty . . . . | 34 98 | | |
| (f) Research . . . . | 1 04 | 8 63 | ... |
| (g) Selling expenses . . . . | — | 3 41 | . |
| (h) Total cost . . . . . | 652 42 | 718 14 | 740 67 |
| (i) Return . . . . . | 56 83 | 100 22 | 79 59 |
| (j) Fair ex works price . . . | 709 25 | 818 36 | 820 26 |
| (k) Existing selling price | 1147 00 | 1 147 00 | 1,147 00 |

28.9.4. **Materials**

28.9.4.1. Cyanamid expects to use six imported materials in future, compared to eight in 1965-66 ; but the total cost of the imported materials will go up by about 34 per cent, mainly because of the devaluation of the Rupee. In the case of indigenous materials also their total cost has increased by about 25 per cent. Consumption factors of many items have also varied and suitable provision has been made for them in consultation with the company and our Assessors.

28.9.4.2. In Pfizer, the same materials will continue to be used in the future as during the costed period. The total cost of materials, both indigenous and imported will go up by 31.3 per cent. In the case of imports, the rise in their value reflects the incidence of the rupee devaluation.

28.9.4.3. As regards Synbiotics, although the total value of materials will remain practically the same in the future also, it is worth while to point out that material cost has been the highest in this unit, although actual usage factors, when compared with the standards did not show any significant variation. The pattern of material usage, however, differs from the other companies. For example, Butonaol, which is imported, has a usage factor of 27.615 kgs. per kg. of Tetracycline in comparison with 7.543 kgs. indigenous in Cyanamid and 2.796 kgs. indigenous in Pfizer. Synbiotics uses imported dried yeast valued at Rs. 19.45 per kg. of Tetracycline ; this material is not used by other companies. Other items of significant value used by Synbiotics only, but not by others, are Dicalite imported at a value of Rs. 40.43 per kg. and Sugar at Rs..83.00 per kg. of Tetracycline.

28.9.5. **Conversion charges.**—For an enhanced output of 22 per cent at Cyanamid and 8 per cent at Synbiotics, the conversion costs of these units show a reduction of about 15 per cent and 23 per cent respectively. On the other hand the operating charges at Pfizer will go up by about 8 per cent even against an assumed rise of 38 per cent in production, mainly because of its higher depreciation charges and the implementation of an agreement recently concluded with its labour union. The conversion costs were generally regarded as high since the process is similar to that for the manufacture of Streptomycin.

28.9.6. **Royalty.**—Royalty is payable by Cyanamid only at 5 per cent of the value of basic bulk drug manufactured and used

or sold in bulk for manufacturing Tetracycline products, calculated on the basis of the world market price drtermined annually at the beginning of the year by the Government of India This has been allowed in our estimate

28 9 7 **Research** —Cyanamid and Pfizer incur expenses on research This has been allocated to Tetracycline (Hcl) on the basis of technical estimates furnished by the company In the case of Synbiotics, research work for all its products is done at the research laboratory maintained centrally for the Sarabhai group of industries No contribution towards this expenditure is contemplated by Synbiotics

28 9 8 **Selling expenses** —Normally, Cyanamid does not sell Tetracyclines (bulk) to outside parties although a very small quantity of 235 kgs was sold during 1965 66 Therefore, no selling expense has been included in the future estimate As regards Synbiotics, although it is free to sell its products to any party, in fact it sells its bulk to its sister concern, Sarabhai Chemicals As no sales efforts are involved in the transaction, no allocation of selling expenses has been made to Tetracycline The company does not incur any expense even on packing material because the product is transferred in returnable containers In the case of Pfizer, however, the expenditure on selling has been restricted at Rs 3 41 per kg

28 9 9 **Return** —A return of 15 per cent on capital employed has been allowed

28 9 10 **Bulk price** —For the purpose of bulk sale, we consider that the Cyanamid price of Rs 709 25 per kg should be adopted

28 10 **Amodiaquin (Camoquin Hydrochloride)**

[illegible]

has been selected by us for assessment of cost of Amodiaquin Parke-Davis produces two basic drugs, Chloramphenicol and Amodiaquin Costs of both of these basic drugs as well as their formulations have been examined by our Cost Accounts Officer for the year ended 30th September 1966

28.10.2. The installed capacity of Parke-Davis for the manufacture of Amodiaquin is 36 tonnes a year but the quantity produced during the costed year was only 14.34 tonnes, representing a capacity-utilisation of about 40 per cent. The company has represented that as the drug was mainly purchased by the National Malaria Eradication Project and Government departments, the production is not likely to exceed the level attained in 1965-66. Further, according to the company, the trend of sales in recent months was downward. We are, however, unable to subscribe to the view of the company as we consider that the recent fall in demand cannot be treated as indicative of the trend during the next three years. We feel that it will not be unreasonable to assume an average demand of 20 tonnes for the future. Accordingly, we have adopted a production of 20 tonnes in our estimate.

28.10.3. Our estimates of cost and price for the future are set out below :

| | Rs./Kg. |
|---|---|
| (a) Material | 87·00 |
| (b) Conversion charges | 12·50 |
| (c) Total factory cost | 99·50 |
| (d) Packing | .. |
| (e) Royalty | .. |
| (f) Research | .. |
| (g) Selling expenses | .. |
| (h) Total cost | 99·50 |
| (i) Return | 7·41 |
| (j) Fair *ex*-works price | 106·91 |
| (k) Existing selling price | No price fixed. |

28.10.4. **Materials.**—The materials form a major part accounting for as much as 87.4 per cent of the total cost of production, of which the share of one imported material, Dichloroqui-

noline is about 77.1 per cent Acetylaminophenol is a major indigenous material forming about 12 6 per cent of the total material cost

28 10 5 **Conversion charges.**—The conversion charges work out to Rs 12 50 per kg showing a nominal economy over the actual period

28 10 6 **Packing, Royalty, Research and Selling expenses.**—These items are not applicable to Amodiaquin as the entire production of this basic drug is consumed by the company itself in producing several formulations

28 10 7 **Return.**—This has been allowed at 15 per cent on employed capital It works out to Rs 7 41 per kg of Amodiaquin

28 11 **Chloroquin Phosphate**

28 11 1 Bengal immunity Co Ltd, Calcutta is one of the units selected by us for examination of costs of three basic drugs, (i) Chloroquin phosphate , (ii) Tetanus Antitoxin , and (iii) I N H (Isoniazid) The company produces the first two drugs on a commercial scale, while in respect of the third it has switched over to a new process of manufacture which is under development In this paragraph we deal with the cost of only Chloroquin Phosphate

28 11 2 The costs of this company were examined for the year ended 30th April, 1967 and it was found that the company has no system of costing for its products No clear cut demarcation of production and service departments was available Stores accounts were not valued for issues to various departments and no data on the time spent in respect of the diverse items were also available In the circumstances, costs were compiled on the basis of the data furnished by the company in its reply to our questionnaire and discussions on costs held with its representatives

28 11 3 The plant of the company has a capacity for 3000 kgs of Chloroquin on double shift and its production during the costed year was 2729 kgs , which is 91 per cent of the capacity As there is sufficient demand for this basic drug, we have considered it appropriate to adopt a higher production based on triple shift working Accordingly, the production level of 3 800 kgs has been adopted for projecting the future costs Based on this

our estimates of cost and fair price for the future have been calculated as indicated below :

| | Rs./Kg. |
|---|---|
| (a) Materials | 158·38 |
| (b) Conversion charges | 60·35 |
| (c) Total factory cost | 218·73 |
| (d) Packing | 3·30 |
| (e) Royalty | .. |
| (f) Research | 6·58 |
| (g) Selling expenses | 10·94 |
| (h) Total cost | 239·55 |
| (i) Return | 19·98 |
| (j) Fair *ex*-works price | 259·53 |
| (k) *existing selling price* | 275·00 |

28.11.4. **Materials.**—The company uses 4 imported chemicals and 12 indigenous chemicals in the manufacture of Chloroquin Phosphate. Of the imported chemicals, Diethyl Ethoxymethylene Melonate and Diamine constitute about 66 per cent of the total material cost, while one indigenous chemical, Methachloroaniline accounts for 17 per cent.

28.11.5. **Conversion charges.**—On the assumed higher production of 3800 kgs. the conversion charges have come down to Rs. 60.35 per kg. In estimating these charges, cognisance has been taken of the increase in wages/salaries with reference to grade increments, but no provision has been made for additional hands for working the third shift as the existing staff/labour is considered adequate for the third shift operation also.

28.11.6. **Packing.**—This has been provided at Rs. 3.30 per kg. in the future estimate.

28.11.7. **Royalty.**—The question of payment of royalty does not arise as the company has not entered into any collaboration agreement with other parties.

28 11 8. **Research and Development.**—The company incurred an expenditure of about Rs 4 65 lakhs during the costed period in respect of (i) standardisation of all products , (ii) quality control of materials , (iii) development work , and (iv) quality control of finished products and intermediates The share relating to Chloroquin Phosphate has been estimated for the future at Rs 25,000 per annum or Rs 6 58 per kg

28 11 9 **Selling expenses.**—The company's claim under this head amounted to Rs 52 00 per kg In our opinion this is very high We have therefore decided to restrict the incidence to Rs 10 94 per kg which will be 5 per cent of total factory cost

28 11 10 **Return.**—The return has been allowed at 15 per cent on capital employed

28 12 **Iodo-Chlor-Hydroxy-Quinoline**

28 12 1 Iodo chlor hydroxy-quinoline has been licensed for manufacture under two categories, *viz*, Iodo chlor-hydroxy-quinoline and Di iodo hydroxy quinoline Under the first category, ten companies have been licensed in the large scale sector and 12 in the small scale sector Of those 16 companies eight each in the large scale and small scale sectors have installed their capacities As regards Di iodo-hydroxy-quinoline, licences have been issued to ten units in the large scale sector and six in the small-scale sector and all have utilised capacity For the purpose of cost assessment we have selected nine units in all Among them, four units, *viz*, Bengal Immunity, Biological Evans Synbiotics and Gujarat Pharmaceutical have not commenced production so far , two other units, Standard Pharmaceuticals and Bengal Chemical, had to be dropped for the reasons stated in Paragraph 28 1 1 Costs were therefore examined at three units only East India Pharmaceutical Works, Alliance Trading Corporation and Neogy Laboratories, all of Calcutta The last two companies belong to the small scale sector None of the three companies has any costing system In East India Pharmaceutical and Neogy Labs records were, however, available from which cost of production could be developed on a fairly reasonable basis But in Alliance Trading maintenance of records was far from satisfactory

Even the value accounts for raw materials issued to manufacture were not maintained Production records were also not available Accordingly, costs have been calculated on the basis of the data furnished by the company and adjusted wherever deemed necessary

28.12.2. East India Pharmaceutical is a public limited company. The share holdings as on 31st December 1966 amounted to Rs. 23.75 lakhs. The company has no borrowings. In addition to Iodo-chlor-hydroxy-quinoline and Di-iodo-hydroxy-quinoline it manufactures other basic drugs also. The company has two plants, one for the manufacture of basic drugs and the other for formulations only. The installed capacity for the manufacture of the two basic drugs is 12,300 kgs. and 4,200 kgs. respectively per annum on single shift. During 1966, the unit worked two shifts for Iodo-chlor-hydroxy-quinoline and a single shift for Di-iodo-hydroxy-quinoline. The production of these two drugs during that year was 22,073 kgs. and 3,011 kgs. respectively. The plants for the manufacture of these two drugs are separate and production for the future has been assumed at 25,000 kgs. for Iodo-chlor-hydroxy-quinoline and 4,500 kgs. for Di-iodo-hydroxy-quinoline.

28.12.3. Alliance Trading manufactures basic drugs and formulations. Its share capital as on 31st December, 1966 was Rs. 93,000. The company produces Iodo-chloro-hydroxy-quinoline along with many other chemicals and drugs. The capacity of the plant for the manufacture of the drugs under examination was not furnished by the company as it is common for all chemicals. A rough indication was, however, given that for drugs the capacity utilisation may be assumed at 20 per cent of the aggregate capacity for all products. Production during 1966 was 7,441 kgs. As against this, the future production has been estimated at 7,470 kgs. per annum.

28.12.4. Neogy Labs. is a three-member partnership concern. The capital account of the partners as on 31st December, 1966 stood at Rs. 1.72 lakhs. The company manufactures both the basic drugs, Iodo-chlor-hydroxy-quinoline and Di-iodo-hydroxy-quinoline besides Bile Salts and Potasssium Iodide. It does not manufacture any formulation. The installed capacity for the basic drugs is stated to be 36,000 kgs. Production during 1966 was 6,538 kgs. of Iodo-chlor-hydroxy-quinoline, and 939 kgs. of Di-iodo-hydroxy-quinoline making a total of 7,477 kgs. The utilisation of capacity was very low at 20.8 per cent only and this has been explained by the company as due to inadequate import licence for Iodine and 8-Hydroxyquinoline. The company expects to get over the raw material difficulty in due course. We have, therefore, assumed in consultation with the representative of the company the future production at 20,000 kgs. of Iodo-chlor-hydroxy-quinoline and 10,000 kgs. of Di-iodo-hydroxy-quinoline.

28 12.5. The estimates of future costs and prices for the costed units, in respect of both the basic drugs are set out in the following Table .

| | East India Pharmaceuticals | Alliance Trading | Neogy Labs |
|---|---|---|---|
| | Rs /Kg | Rs /Kg | Rs /Kg |
| (a) Materials . . . . . | 34 37 | 28 10 | 36 17 |
| (b) Conversion charges . . . . | 26 24 | 11 28 | 4 91 |
| (c) Total factory cost . . | 60 61 | 39 38 | 41 08 |
| (d) Packing . . | | 0 40 | 0 40 |
| (e) Royalty . . . | | | |
| (f) Research . . | | | |
| (g) Selling expenses . | | 1 99 | |
| (h) Total cost . | 60 61 | 41 77 | 41 48 |
| (i) Return | 5 07 | 3 28 | 3 70 |
| (j) Fair *ex* works price | 65 68 | 45 05 | 45 18 |
| (k) Weighted average fair price of Alliance Trading and Neogy Lbs | | 45 16 | |

28 12 6 **Materials.**—The raw material costs for the future show a small fall at East India Pharmaceutical and Alliance Trading The former uses Phenol as the basic raw material for the manufacture of Iodo-chlor-hydroxy-quinoline and 8-Hydroxyquinoline for Di-iodo hydroxy-quinoline Alliance Trading on the other hand uses Oxyquinoline for the manufacture of Iodo-chlor-hydroxy-quinoline Neogy Laboratories develops both Iodo-chlor-hydroxy quinoline and Di-iodo hydroxy-quinoline from the same material, *viz*, 8-Hydroxyquinoline The total cost of raw materials at Neogy Labs shows an increase of about 29 per cent, over the actual period because of higher cost of imported materials

28 12 7. **Conversion costs.**—Despite an increase of 13 per cent in the level of production assumed for East India Pharmaceutical the conversion cost of Iodo-chlor-hydroxy-quinoline

shows little variation. This is because the economies of larger production have been off-set by increases in dearness allowance and wages of all categories of employees effected last year. In Alliance Trading the conversion cost has remained almost the same. There is no increase in the output of the company either. In Neogy Labs. on the other hand, the operating cost shows a substantial reduction as no addition to staff and labour is envisaged to achieve the higher estimated output.

28.12.8. **Packing.**—Packing expenses are incurred by Alliance Trading and Neogy Labs. only, as East India Pharmaceutical does not sell the product to outside parties. The cost of packing is estimated at Re. 0.40 per kg. both for Alliance Trading and Neogy Laboratories.

28.12.9. **Royalty, Research and Selling expenses.**—There is no expenditure under royalty and research in all the three companies. As regards selling, East India Pharmaceutical consumes the entire output in preparing formulations in its own department. As such, it does not have any selling expenses on the basic drugs. At Alliance Trading, the selling expenses of Iodo-chlor-hydroxy-quinoline have been restricted to Rs. 1.99 per kg. Neogy Labs. sells its products through a selling agent at varying rates without any commission. The rates are fixed by negotiation. On a few occasions the products are sold direct to consumers on which the company pays a commission not exceeding 10 per cent. No expenses are therefore involved in the marketing of this basic drug.

28.12.10. **Return.**—Provision for return has been made at 15 per cent on the employed capital.

28.12.11. **Bulk Price.**—We would have wished to adopt the cost of the unit which manufactures this drug from the basic raw material *viz.* Phenol or other locally available raw material but this was not possible because the only unit which manufacture this drug from Phenol is East India and it does not market the drug at basic stage. The bulk price has therefore been computed at Rs. 45.16 per kg. by taking the weighted average of the fair selling prices of Alliance Trading and Neogy Labs. East India Pharmaceutical has been excluded as it does not market this basic drug.

28.13. **Chlorpropamide**

28.13.1. This product is manufactured by Pfizer Ltd., at its Chandigarh Plant, Punjab. Besides this drug, the factory also produces other basic drugs, such as, broad spectrum antibiotics

*viz*, Oxy tetracycline and Tetracycline Chlorpropamide is marketed under the trade name of 'Diabinese' This organisation, in addi

such as

tonics,

produc

companies also produce Chlorpropamide, *viz*, Albert David and Bengal Chemicals and the production at these units was only about 0 15 tonne in 1966' Therefore, only Pfizer has been selected for cost study which has a large capacity and should indicate fair production costs

28 13 2 Pfizer is a public limited company with a share capital of Rs 266 lakhs, for which Pfizer Corporation of Panama, the parent company, holds shares of the value of Rs 200 lakhs The company maintains a good system of costing and cost data were examined for the year ended 30th November, 1966

28 13 3. **Capacity and production.**—The present installed capacity of Pfizer is 15 tonnes of Chlorpropamide on three shift working Production commenced in September 1965 and reached 12 2 tonnes in 1965-66 The company has stated that this level could not be maintained in future because in 1965-66 there was an export demand for this product of about 4 6 tonnes, which is not likely to repeat itself According to the company, the future production would at best be only 7 6 tonnes per annum and it has suggested that estimates of costs to be of any realistic value should be based on this level We have accepted the Company's estimate of production in calculating the future cost

28 13 4. Our estimates of cost and price for the future are summarised in the following table —

| | Rs /Kg |
|---|---|
| (a) Materials | 49 02 |
| (b) Conversion charges | 33 51 |
| (c) Total factory cost | 82 53 |
| (d) Packing | — |
| (e) Royalty | — |
| (f) Research | — |

| | Rs./Kg. |
|---|---|
| (g) Selling expenses | ... |
| (h) Total cost | 82·53 |
| (i) Return | 13·07 |
| (j) Fair *ex-works* price | 95·60 |
| (k) Existing Selling Price | No price fixed. |

28.13.5. It was observed that Triethylonine (imported) and Acetic Acid (indigenous) were procured by other producers at a lower cost. We have decided to adopt the lower rate for material valuation. The cost of imported components is Rs. 42.46, out of this total material cost of Rs. 49.02. Parachlorobazen sulphamet is imported at Rs. 27.27 per kg. we were advised that it can be produced indigenously from chlorosulphanium acid ammonia at about Rs. 12 per kg. The cost of prophylobymide Rs. 53.36 is also on the high side and it is expected that with judicious selection of sources of supply it could be substantially reduced.

28.13.6. Estimates of conversion charges are, in our opinion, very high as the process of manufacture of this drug is very simple and involves one step in processing. We have similarly adjusted the actual costs suitably to account for grade increments and additional amounts payable to the workmen and staff on account of labour agreement. The revised conversion cost has worked out to Rs. 33.51 per kg.

28.13.7. **Packing, Research and Selling.**—As this drug is not sold outside, and no research is involved, we have not allowed any amount under the heads.

28.13.8. **Return.**—Return has been allowed at 15 per cent on capital employed.

28.14. **Tolbutamide**

28.14.1. Only two units, Hoechst Pharmaceuticals Ltd. and Haffakine Institute, both of Bombay, manufacture this basic drug out of the five units licensed. One unit has surrendered the licence while the other two, Unichem Laboratories, Bombay and Albert David (India) Ltd., Calcutta have suspended production. For the purpose of cost study only Hoechst has been selected by us. The company maintains detailed records of costs which have been examined for the year ended 31st December 1966.

28 14 2. The installed capacity of Hoechst for the Manufacture of Tolbutamide is 36 tonnes per annum on single shift but its production has been far below this level During the costed period the production attained was 24 5 tonnes the highest ever attained representing about 68 per cent of the capacity This underutilisation of capacity was mainly due to the closure of the plant for over six months in 1966 We understand that the domestic demand for Tolbutamide is about 25 tonnes a year As Hoechst is the only company which at present caters to the demand on a large scale the level of production has been adopted at 20 tonnes in working out the future estimates

28 14 3 The ex-works cost and price for the future which have been developed on the assumed production of 20 tonnes are shown below —

| | Rs /kg |
|---|---|
| (a) Materials | 43 56 |
| (b) Conversion charges | 23 49 |
| (c) Total factory cost | 67 05 |
| (d) Packing | 0 48 |
| (e) Royalty | |
| (f) Research | |
| (g) Selling expenses | |
| (h) Total cost | 67 53 |
| (i) Return | 6 63 |
| (j) Fair *ex* works selling price | 74 16 |
| (k) Existing selling price | No price fixed |

28 14 4. **Materials.**—During the costed period of the chemicals used for the production of the basic drug, two items accounted for about 99 4 per cent of the total cost of the materials As the materials cost claimed by the company for the future showed an increase of about 41 5 per cent we have, in consultation with the Assessors, restricted the cost of materials to the levels of the actual period

28 14.5 **Conversion charges.**—On a larger production of 20 tonnes the conversion charges have gone down by about 5

per cent and they have been estimated at Rs. 23.49 per kg. for the future. Even this cost was felt to be high since one step is only needed for the conversion of the raw materials into the finished product.

28.14.6. **Packing.**—Tolbutamide is used exclusively by the manufacturer *in his own* formulations. Therefore, the cost of packing allowed at Re. 0.48 per kg. is in respect of packing materials used for storage before the chemical is used for formulation.

28.14.7. **Royalty, Research and Selling expenses.**—There has been no expenditure under these heads.

28.14.8. **Return.**—This has been allowed at 15 per cent on capital employed.

28.15. **Insulin**

28.15.1. Boots Pure Drugs Company (India) Ltd., Bombay produces Insulin under a "manufacturing" agreement with Boots Pure Drug Co. Ltd., Nottingham, England. The Indian company has another agreement with its U.K. principals for the supply of "know-how and technical assistance" for the manufacture of crystalline Insulin and its formulations.

28.15.2. The company has a fairly good system of maintaining its data for developing costs of its products. 'Standard Costing' is being evolved and is expected to come into force shortly. Accounts for the year ended 31st December 1966 were examined for determining the actual costs.

28.15.3. The licensed capacity of the plant for crystalline Insulin is 1080 mega units (1500 M.U. strength) on three shift working. During 1966, it achieved a production of 458 M.U. of plain crystalline Insulin. The lower production at 42 per cent was attributed mainly to teething troubles. Since Boots is the only unit manufacturing this vital life saving drug in India, it is essential that the company should exploit its full capacity. But due to non-availability of the basic raw material, *viz.*, pancreas, it had to restrict its output to 820 m.u. only of Plain Crystalline Insulin representing capacity utilisation to the extent of 76 per cent.

28.15.4. Insulin is obtained from pancreas glands of cattle by mincing and processing them in alcohol to extract the hormone. Pancreas glands are obtained from beef canners in America. As secretion of Insulin diminishes with age, cattle is slaughtered

while it is two year o'd 1800 animals are required to obtain half a tonne of Pancreas gland and processed with a thousand gallons of alcohol, it will yield only a few ounces of crystalline powder

creas cannot be is c sed It has been brought to our not ce by the company that there have been instances when the entire quantity of pancreas set fo processing was found to contain no Insulin at all Further, no scientific or technolog cal tests are stated to have so far been d covered to determ ne the content of Insulin before the pancreas are put on the p ocessing channel, so that the manufacturer could u efully und take the ventu e and avo d the inevitable losses

28 15 5 Our estimate of future fair ex wo ks price has been developed as indicated in the following table —

| | | Rs /m u |
|---|---|---|
| (a) Materials | . | 2,778 66 |
| (b) Convers on charges | . | 1,308 16 |
| (c) Total factory cost | | 4 086 82 |
| (d) Pack ng | | 8 54 |
| (e) Royalty | | |
| (f) Re earch | | 109 76 |
| (g) Sell ng expenses | | 235 12 |
| (h) Total cost | | 4440 24 |
| (i) Return | | 696 32 |
| (j) Fa r ex works pr ce | | 5,136 56 |
| (k) Ex st ng sell ng price | | 5,000 00 |

28 15 6 **Materials** ·

28 15 6 1 Of the raw materials used in the manufacture of Insulin three are imported and four obtained indigenou ly In the total raw material co t of Rs 2778 66 per m u , the impo ted materials account for 90 9% and the balance of 9 1% is represented by the indigenous materials The cost of raw materials has gone up by 69 5% in the estimate over 1966

28.15.6.2. During 1966, the entire quantity of pancr was imported from the United States of America. The wo supply of Ox's pancreas is arranged from the U.S.A. accordi to a distribution plan determined by the suppliers. The Indi quota being a limited one, the company was exploring possibilit of using pancreas from other sources. Although pancreas of Au tralian origin were found to contain Insulin next best to the U.S.A their yield is said to be very poor, being only 2300 units per kg of pancreas as against 4200 units from American pancreas. Fo achieving the increased production in future, the company pro poses to meet the shortfall in the American supplies by supple- menting from Australian sources. Supplies of pancreas from Ame- rica are expected to be of the order of 140,000 kgs. per annum and the balance from Australia. Rise in the cost of indigenous raw materials is ascribed mainly to their prices and, to some extent, also to the higher usage factor.

28.15.6.3. It needs to be mentioned that prices of imported Insulin are about one-third the indigenous price of the finished drug. The cost of pancreas alone is about 47 per cent of the fair ex-works price. The total cost of the imported raw material works out to more than 50 per cent of the total ex-works price and it was suggested to us that it would be cheaper to import all the Insulin needed instead of importing the raw material and processing it at a very heavy cost.

28.15.7. **Conversion Charges.**—The conversion charges have been estimated at Rs. 1308.16 per m.u. which shows an economy of about 15 per cent only for an increase in the estimated production by 79 per cent. A greater economy would be possible if American pancreas which has a higher yield, are available to meet the entire requirements of the company. But as stated earlier, supplies from this source are limited.

28.15.8. **Packing.**—On an increased production the cost of packing has come down and is estimated at Rs. 8.54 per m.u.

28.15.9. **Royalty.**—Although under the manufacturing agree- ment the Indian company was expected to pay Royalty to the English company on all goods manufactured or packed the opera- tion of this clause was waived in the case of Insulin.

28.15.10. **Research.**—Research contribution upto a maximum of £ 5000 is payable (in Sterling) at Nottingham on the basis of 3 per cent of the sales value of manufactured bulk crysta- the Insulin sold or used in its modified form of other Insulin

formulations After adjusting for the devalued Sterling, the incidence works out to Rs 109 76 per m u of Insulin for the future

28 15 11 **Selling expenses.**—The incidence of selling expenses per m u of Insulin works out to Rs 235 12 showing an economy of about 31 per cent in the estimate over 1966

28 15 12 **Return.**—Return at 15 per cent on employed capital has been provided in the estimate for the future price which works out to Rs 696 32 per m u

28 16 **Isonicotinic Acid Hydrazide (I.N.H.)**

28 16 1 As many as 18 companies, 14 in the large-scale sector and 4 in the small-scale sector, were licensed for manufacture of I N H in the country By the end of 1967, 9 units in the large scale sector and 2 in the small scale sector had installed their capacities Of these, the following seven units were selected for cost study, viz , Bengal Chemical, Bengal Immunity, Biological Evans, Pfizer and Synbiotics in the large scale sector and Gujarat Pharmaceuticals and Suneeta Laboratories in the small scale sector But our cost study had ultimately to be confined to three units only, Biological Evans, Pfizer and Suneeta Laboratories, as the relevant data were not available for the other selected units While Synbiotics has suspended production, Gujarat Pharmaceuticals is yet to commence manufacture As stated earlier, data available at Bengal Chemical could not be used for a proper cost analysis The technique of manufacture was being changed at Bengal Immunity but the full particulars of the modified process were not available to project the future estimates Biological Evans and Pfizer maintained a good costing system Although no such accounting system exists in Suneeta Laboratories, data were available to develop costs on a fairly reasonable basis

28 16 2 I N H can be produced from either Gamma Picoline or 4 Cynopyridine as the basic chemical Although it will be more expensive to produce from Gamma Picoline, Biological, Evans and Pfizer use this material In Suneeta Laboratories I N H is developed from 4 Cynopyridine We are informed that Biological Evans wes contemplating to switch over to the use of 4 Cynopyridine, but this could not be implemented as the Government of India have already set up a plant to manufacture Gamma Picoline in the country.

28 16 3 Cost data at Biological Evans were examined for the half year ended 30th June 1967 While the installed capacity

of this unit is 8,000 kgs. a year, the production during the costed period was very low at 880 kgs. due reportedly to lack of demand for the product. But during the next three years production of I.N.H. is expected to be maintained at 10 tonnes per annum and we have adopted this production level for calculating the future estimate of cost. The company has also approached Government for revising its capacity as its plant is capable of giving a higher output.

28.16.4. The costs at Pfizer were examined for the year ended 30th November 1966. The production of I.N.H. during that year was 23,900 kgs. at the Bombay plant as against its installed capacity of 38,000 kgs. per annum. The unit worked single shift upto August 1966 and double shift thereafter. The future production on I.N.H. has been estimated at 70,000 kgs. for this company.

28.16.5. Production of I.N.H. in Suneeta Laboratories was commenced in January 1967. Compared to its installed capacity of 24,000 kgs. per year it has manufactured only 3,140 kgs. during the 18 months ended 30th September 1967. Even from this small volume of output about 1,700 kgs. could not be disposed of by October 1967. The disproportionately low offtake was attributed by the company to the glut of imported material in the market. The demand is believed to be picking up and the management expects to gear up the production to its capacity level of 24,000 kgs. in 1967-68, stepping it upto 48,000 kgs. by 1969-70. The average annual production of 36,000 kgs. for the next three years has been taken for developing the future costs for this unit.

28.16.6. Our estimates of future costs and prices in respect of the three companies developed on the production levels mentioned above are set out in the following Tables :—

| | Biological Evans | Pfizer | Suneeta Labs. |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| | Rs./Kg. | Rs./Kg. | Rs./Kg. |
| (a) Materials | 48·52 | 57·82 | 42·09 |
| (b) Conversion costs | 27·42 | 39·62 | 4·67 |
| (c) Total factory cost | 75·94 | 97·44 | 46·76 |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| (d) Packing | 0 34 | | 1 10 |
| (e) Royalty | 2 67 | | |
| (f) Research | 0 83 | 1 [illegible]1 | |
| (g) Selling expenses | 2 81 | | 0 54 |
| (h) Total cost | 82 59 | 98 95 | 48 40 |
| (i) Return | 8 99 | 8 66 | 3 39 |
| (j) Fair ex works price | 91 [illegible]8 | 107 61 | 51 79 |
| (k) Existing selling price | 80 00 | | 80 00 |

28 16 7 **Materials.**—Cost of raw material showed only marginal variations between the actuals and the future estimates in the case of Pfizer and Suneeta Laboratories, while in the case of Biological Evans no variation is anticipated as the actual cost for the half year was based on the latest purchase prices

28 16 8 **Conversion Charges.**—While in Suneeta Laboratories the conversion cost will come down steeply in the future it will remain practically unchanged in the case of Biological Evans and will increase slightly in the case of Pfizer despite their higher production levels in future The reasons are given below As Suneeta Laboratories had the full complement of staff/labour during the costed period despite its highly restricted output, no major addition under these heads is contemplated for the future although the production is expected to increase several fold Further, the plant and equipment in this unit were mostly manufactured by its own engineers in its own Works and therefore the incidence of depreciation is comparatively low In Biological Evans the economies to be gained from fixed and semi fixed expenses will be offset by the additional expenditure on account of normal grade increments in wages and salaries and the additional personnel required for the assumed higher production As regards Pfizer, the economies expected from increased production will be more than nullified by the provision of an additional incidence of Rs 8 per shed to be paid under an agreement entered into with the Workers' Union in March 1968 Further, under this new agreement, the company has to provide certain transport facilities to its workers, for which purpose it will have to incur additional expenditure to acquire and maintain additional vehicles

28.16.9. **Packing.**—Of the three companies, Pfizer does not sell I.N.H. to any outside party. Hence no packing charge is incurred by it. The cost of packing at Biological Evans has been estimated at Re. 0.34 and at Suneeta Laboratories at Rs. 1.10 per kg.

28.16.10. **Royalty.**—Royalty is payable only by Biological Evans which has a collaboration with Bracco Industria Chemica, Milano, Italy, for manufacture of I.N.H. Royalty is payable on the current bulk price at 3.3 per cent and has been allowed in our estimate.

28.16.11. **Research.**—Research expenses have been allocated at Re. 0.83 per kg. at Biological Evans and Rs. 1.51 per kg. at Pfizer. At Suneeta Laboratories it was stated that its research laboratory is maintained essentially for its aromatic products. Whatever experiment has to be done for I.N.H., it is invariably in the nature of quality control. Therefore, no share of research expense incurred by Suneeta Laboratories has been allocated to I.N.H.

28.16.12. **Selling expenses.**—I.N.H. is being sold to other formulators by Biological Evans and Suneeta Laboratories. The quantum of selling expenses amounts to Rs. 2.81 per kg. at the former and Re. 0.54 at the latter. The difference in the proportion of selling expenses between the two companies may be due to the fact that Biological Evans is in the large scale sector while Suneeta Laboratories belongs to the small scale sector. Suneeta Laboratories has a sales office at Bombay which handles sales of all the eight drugs it manufactures. The expenses allocable to I.N.H. has been estimated on the basis of selling effort needed for this product.

28.16.13. **Return :**

28.16.13.1. This has been provided at 15 per cent on the employed capital which works out to Rs. 8.99 for Biological Evans, Rs. 8.66 for Pfizer and Rs. 3.39 for Suneeta Laboratories.

28.16.13.2. In view of the fact that Government have already established capacity for Gamma Picoline and Suneeta Laboratories will have to switch over to the use of this basic chemical in course of time, we have adopted the fair ex-works price estimated for Biological Evans as the bulk price for the industry. This works out to Rs. 91.58 per kg.

## 28 17 Para-Aminosalicylic Acid (P.A S.)

28 17 1 Government have issued licences to six companies to manufacture P A S , of which four have installed their capacities They are Bio Chemical and Synthetic Products Ltd , Hyderabad, Biological Evans Ltd , Hyderabad, Pfizer Ltd , Bombay and Wander Pharmed Ltd , Bombay All the four companies were selected for cost investigation Although no regular system of cost accounting exists in both Biosynth and Wander, data were available to develop costs on a fairly reasonable basis Biological Evans and Pfizer, however, have a good costing system

28 17 2 Under an agreement entered into by Biochemical and Synthetic with Cilag-Hind Ltd , in 1952, the latter undertook the manufacture of P A S and its salts from November 1966 From 1st January 1968, Biochemical and Synthetic has taken over the production and sales of P A S Against the present capacity of 120 000 kgs per annum the future average production of Sodium P A S has been estimated at 125,000 kgs per annum, as the company does not anticipate any difficulty in selling the entire production

28 17 3 The licensed capacity of Biological Evans is 50,000 kg per annum As the installed plant is capable of yielding a higher output, the company has already approached Government for reviewing its capacity Therefore, against the actual production of 24,715 kgs of Sodium P A S during the first half of 1967, the future production has been adopted at 60,000 kgs

28 17 4 In the case of Pfizer, the present installed capacity is 60 000 kgs. Against this, the production during 1965 66 was 74 700 kg The factory is undergoing expansion and it was stated that the total licensed capacity after expansion, which will be effective from 1968/69, will be 110 000 kgs per annum Against this the estimated production for future has been reckoned at 100 000 kgs which indicates about 90 per cent utilisation of the capacity

28 17 5 Wander went into production of Sodium P A S in September 1964 It has realised more than its full installed capacity of 90 000 kg by producing 102,717 kgs in 1965 and 103,959 kg in 1966 With the turn of the year, the company's manufacturing activity received a setback due to the glut of imported P A S in the market The factory had eventually to lay off in July 1967 when its production had reached 44,600 kgs In the

meantime, the company had approached Government for increasing its capacity. Taking into consideration the achieved production and also the demand for this drug, we have assumed future production at 100,000 kgs. per annum for this unit.

28.17.6. We have developed our estimates of future costs for all the four units as indicated below :—

| | Biochemical and Synthetic | Biological | Wander | Pfizer | Weighted average excluding Pfizer |
|---|---|---|---|---|---|
| | Rs./Kg. | Rs./Kg. | Rs./Kg. | Rs./Kg. | Rs./Kg. |
| (a) Materials . . | 21·38 | 20·87 | 20·92 | 24·90 | 21·11 |
| (b) Conversion cost . | 4.38 | 6.70 | 7·52 | 9·94 | 5·97 |
| (c) Total factory cost . . . | 25·76 | 27·57 | 28·44 | 34·84 | 27·08 |
| (d) Packing . . | 0 43 | 0·34 | 0·03 | 0·95 | 0·27 |
| (e) Royalty . . | .. | .. | 1·60 | .. | 0·56 |
| (f) Research . . | 0·20 | 0·28 | .. | 0·51 | 0·15 |
| (g) Selling expenses . | 0·48 | 1·24 | 0·41 | 1·74 | 0·62 |
| (h) Total cost . | 26·87 | 29·43 | 30·48 | 38·04 | 28·68 |
| (i) Return . . | 1·97 | 2·54 | 3·45 | 3·79 | 2·60 |
| (j) Fair ex-works price | 28·84 | 31·97 | 33·93 | 41·83 | 31·28 |
| (k) Existing selling price . . | .. | 32·00 | 35·60 | 48·00 | .. |

The total costs are comparable for three companies, *viz.* Biochemical and Synthetic, Biological Evans and Wander and they vary from Rs. 26.87 to Rs. 30.48 per kg. As against this, the total cost at Pfizer was Rs. 38 04. The reason for variation is attributable to the fact that Pfizer manufactures P.A.S. acid and not Sodium PAS.

28.17.7. **Materials.**—Cost of raw materials in all the units do not show any substantial variation between the actual period and those estimated for future. It was, however, observed that whereas the cost of material increased from Rs. 22.85 to Rs. 24.90

in the case of Pfizer, it came down from Rs 21 51 to Rs 20 92 in the ca e of Wander The major d fference in Pfizer may be attributed to the unit cost of imported Meta Amino Phenol which was procured at Rs 15 78 per kg during 1965 66 in comparison with Rs 16 15 for the future and the price of ind genou Act vated Carbon ro e from Rs 2 41 to Rs 3 41 per kg during the same period Another materi l which shows a steep rise in the rate of procurement is Calcium Phos Diabasic which ro e from Rs 3 33 to Rs 7 50 It is pertinent to note that the rate of impo ted Meta-Amino Phenol has varied from company to company rang ng from Rs 16 15 in the case of Pfizer to Rs 18 58 in the case of Wander.

28 17 8 **Conversion charges.**—While the conversion charges estimated for the future show a fall of 21 8% and 6 0% in the ca e of Biochemical and Synthetic and Wander re p ct vely, they have remained the same at Biological Evans but h ve gone up in the case of Pfizer by 6 2% The economies earned on account of larger p oduction at Pfizer were more th n set off by the additional liability becoming due on account of agreement with workers union

28 17 9 **Packing and Royalty.**—Packing costs vary from Re 0 03 per kg in the case of Wander to Re 0 95 in the case of Pfizer The former's packing cost is low because it re-u es the drums in wh ch the raw material *viz* Meta-Amino Phenol, is impo ted for packing the manufactured Sod um P A S Royalty is payable only by Wander to its collaborators at 5 per cent on the amount invoiced by the company to its customers ba ed on factory prices Appropriate amount has been provided in the cost

28 17 10 **Research and Selling expenses.**—Research and selling expenses have been suitably includ d in the costs No research expend ture is, however, incurred by Wander Pharmed Wherever selling expense was more than 5 per cent of the factory cost it was restricted to 5 per cent

28 17 11 **Return.**—Return has been allowed at 15 per cent on capital employed

28 17 12 **Bulk price.**—As Pfizer does not manufacture Sod um P A S , we have d c d d to exclud its co t and determine the bulk price on the bas s of the weighted average of the fair prices of the other th ee costed units, which have been worked out to Rs 31 28 per kg

## 28.18. Tetanus Anti-toxin (A.T.S.)

28.18.1. Six units were licensed to manufacture Tetanus Anti-Toxin, *viz.*, Bengal Chemical, Bengal Immunity, Dey's Medical, Chowgule & Company, Haffkine Institute, and Biological Evans. Of these, it is understood that Chowgule & Co. has not yet established its factory. Of the remaining five, production was negligible at Bengal Chemical. Costs were therefore studied in respect of three units, *viz.*, (i) Bengal Immunity—the largest producer of this drug; (ii) Biological Evans; and (iii) Haffkine Institute whose installed capacities were stated to be 9449, 1200 and 3000 Mega Units (M.U.) respectively.

28.18.2. The cost of prodution was found to be excessive at the Haffkine Institute and it presented certain abnormalities. Therefore, the costs at this unit have been excluded from the purview of our study. The costs at Bengal Immunity and Biological Evans have been taken into account for a comparative assessment.

28.18.3. In addition to Tetanus Anti-toxin, Bengal Immunity produces Chloroquin Phosphate and Isoniazid (I.N.H.) as well as formulations from various items. Biological Evans has set up a separate unit at Hyderabad for the production of Anti-Tetanus Serum. While Bengal Immunity has no collaboration with any foreign firm, Biological Evans has a collaboration agreement with Evans Medical Ltd., Liverpool, U.K. and two other agreements with other firms for the development of other products. As far as Anti-Tetanus Serum is concerned, this is not covered by any of the agreements and, therefore, no Royalty is payable in respect of this drug.

28.18.4. **Capacity and production.**—The capacity at Bengal Immunity *viz.*, 9,449 mega units is equivalent to 3200 litres of sera on single shift basis and the production during 1966/67 was 1,324 litres of sera which represented utilisation of capacity of 41%. The low utilisation was attributed to liberal import of finished sera and the limited demand for the domestic product. Biological Evans imported sera in the early part of 1967 and processed it into A.T.S. formulations. However, the company has set up a stable in the meantime for extracting blood for producing the sera. The capacity of 2160 mega units at this plant is equivalent to 720 litres. Production during the half year ended 30th June 1967 was on an experimental scale. In working out our estimates production has been assumed at 7,000 m.u. for Bengal Immunity and 2,160 m.u. for Biological Evans.

28 18 5 Based on the above levels of output, estimates of costs have been prepared for the future and are set out in the following table —

| | Bengal Immunity | Biological Evans |
|---|---|---|
| | Rs /m u | Rs /m u |
| (a) Materials | 404 15 | 199 97 |
| (b) Conversion charges | 124 59 | 86 75 |
| (c) *Total factory cost* | 528 74 | 286 72 |
| (d) Packing | | |
| (e) Royalty | | |
| (f) Research | | |
| (g) Selling expenses | | |
| (h) Total cost | 528 74 | 286 72 |
| (i) Return | 44 41 | 37 76 |
| (j) Fair selling price | 573 15 | 324 48 |
| (k) Existing selling price | N p ce | fixed |

[illegible]

other company This was possible because of the higher yield factor The yield at Bengal Immunity was 9 1 m u per horse, while in Biological Evans it was 21 6 m u During the discussions the representative of the latter company emphasised that as soon as they were able to fully stabilise their production of A T S on a commercial scale the cost will further come down and the economies achieved thereby will be passed on to the consumers in the shape of reduction in the selling prices of A T S formulation

28 18 6 **Materials :**

28 18 6 1 Rates of materials both imported and for Bengal Immunity during 1966 67 and for the fi

and large, remained the same except for Pepsin the price of which has fallen by a small margin. But this has been more than off set by an increase in feeding charges.

28.18.6.2. In the case of Biological Evans, while during the costed period, A.T.S. was formulated out of imported serum, the company was trying to develop its own production of A.T.S. during January—June 1967. It expects to use 3 items of imported materials and 28 indigenous materials the costs of which have been provided in our future estimate at Rs. 1.26 and Rs. 21.49 per M.U. of A.T.S. respectively. The company has its own stable of horses. The cost of their maintenance has been estimated at Rs. 135.55 per m.u. against Bengal Immunity's at Rs. 282.63.

28.18.7. **Conversion charges.**—Mainly due to an assumed production increase of 94 per cent over the costed period, the conversion charges of Bengal Immunity show a decrease from Rs. 203.98 to Rs. 124.59 per m. u. In the case of Biological Evans the conversion charges are determined at Rs. 86.75 per m. u. on the basis of technical estimates made by the company.

28.18 8. **Packing, Research, Royalty and Selling expenses.**—These items do not apply. Both Bengal Immunity and Biological Evans do not sell the bulk serum to outside parties.

28.18 9. **Return.**—This has been provided at 15 per cent on capital employed which works out to Rs. 44.41 per m.u. in the case of Bengal Immunity and Rs. 37.76 per m.u. in the case of Biological Evans. No ex-factory price is suggested since this drug is not sold in bulk but only in formulations by all the manufacturing units.

28.19. **Prednisolone :**

28.19.1. Prednisolone is now being manufactured only by Wyeth Laboratories Ltd., Bombay as the other two units which had installed their capacities, namely, Glaxo Laboratories (I) Pvt. Ltd., and Merck Sharp and Dhome of India Ltd., both of Bombay, have since suspended its production. Wyeth Labs. has a collaboration agreement with American Home Products Corporation, New York, which has invested Rs. 55 lakhs in the total share capital of Rs. 75 lakhs (*i.e.* 73.33%). Besides manufacturing the basic drug, the Indian company also formulates Prednisolone tablets and other products in its formulation department. It has a regular system of budgetary control and costs were examined for the year ended 31st October, 1966.

28 19 2 The installed capacity is 600 kgs of Prednisolone per annum on three shift working Although the production during 1965 66 was 482 5 kg as the plant is capable of giving a higher production than the stated capacity, we have decided to adopt in consultation with the representatives of the company, a higher production level of 650 kgs per annum for calculating the future fair ex-works price

28 19 3 Our estimates of future cost and price developed on an annual production of 650 kgs are summarised as under —

| | Rs /Kg |
|---|---|
| (a) Materials | 5,166 91 |
| (b) Coversion charges | 5 415 38 |
| (c) Total factory cost | 10,582 29 |
| (d) Packing | 12 63 |
| (e) Royalty | |
| (f) Research | |
| (g) Selling expenses | |
| (h) Total cost | 10 594 92 |
| (i) Return | 1 3[illegible]1 29 |
| (j) Fair ex works price | 11 9[illegible]6 21 |
| (k) Existing selling price | 16,800 00 |

28 19 4 **Materials.**—The company uses 19 imported materials, 27 indigenous materials and roots which account for 56 4 per cent, 25 6 per cent and 18 0 per cent of the total cost of materials respectively The important imported materials are Acetic Anhydride Chloroform, Activated Carbon, Methylane Chloride, H Br gas, Raney Nickel Catalyst, Beef Extract, Iodine and Toluene Among the indigenous materials mention may be made of Acetic Acid Glacial, Methanol and Bromine As regards roots, the price claimed by the Company seems to be high in view of the fact that we have evidence of the roots being available at comparatively lower cost We have, however, allowed the cost of roots at the level obtaining during the actual period, *viz*, Rs 2 48 per kg, even though we were provided with evidence to indicate that even this rate is high

28.19.5. **Conversion charges.**—This element works out to Rs. 5415.38 per kg., *showing an economy of 14 per cent for a* production increase of 35 per cent over the 1965-66 level.

28.19.6. **Packing.**—The cost of packing has been kept at the same level as in 1965-66 *i.e.*, at Rs. 12.63 per kg.

28.19.7. **Royalty and Research.**—The Company has no liability to pay any Royalty to its collaborators as they have a participation in the company's share capital. No expense has been incurred on research.

28.19.8. **Selling expenses.**—No selling expenses have been allocated to the bulk drug sales as the company has stated that practically no sales effort is involved for Prednisolone as a basic drug.

28.19.9. **Return.**—The return has been allowed at 15 per cent *on employed capital.*

28.20.1. As a result of the analysis undertaken in the preceding paragraph we have finally arrived at the following fair ex-works prices :—

TABLE 28.2

*Fair ex-works selling prices recommended for basic drugs*

| | | |
|---|---|---|
| 1. | Vitamin A . . . . . | Rs. 391·00 per 1000 m.u. |
| 2. | Vitamin B12 . . . . | Rs. 113·84 per gm. |
| 3. | Vitamin C . . . . . | Rs. 72·70 per kg. |
| 4. | Sulphadiazine . . . . . | Rs. 58·89 per kg. |
| 5. | Penicillin Potassium G . . . | Rs. 0·351 per m.u. |
| 6. | Sodium Penicillin G . . . . | Rs. 0·399 per m.u. |
| 7. | Procaine Penicillin . . . . | Rs. 0·336 per m.u. |
| 8. | Potassium Penicillin V . . . | Rs. 0·537 per m.u. |
| 9. | Streptomycin . . . . | Rs. 285·00 per kg. |
| 10. | Chloramphenicol . . . . | Rs. 357·66 per kg. |
| 11. | Tetracycline . . . . . | Rs. 709·25 per kg. |
| 12. | Amodiaquin . . . . . | Rs. 106·91 per kg. |

TABLE 28 2—*Contd*

| | | |
|---|---|---|
| 13 | Chloroqu n Pho phate | Rs 2э9 53 per kg |
| 14 | Io.lo chlor hydroxyquinoline | Rs 45 14 per kg |
| 15 | Chlorpropamide | Rs 95 60 per kg |
| 16 | Tolbutamide | Rs 74 16 per kg |
| 17 | Insulin | Rs 5 136 5C per m u |
| 18 | I N H | Rs 91 58 per kg |
| 19 | P A S | Rs 31 28 per kg. |
| 20 | P A S Acid | Rs 41 83 per kg |
| 21 | Tetanus Anti toxin | No price fixed |
| 22 | Prednisolone | Rs 11 946 21 per kg |

28 20 2 In some cases fair ex works price of a unit manufacturing the same drug may be higher but we expect that with suitable economie in the cos' of material as well as conversion or operational efficiencies of the proce.s the high cost unit will also be able to achieve lower cost of production

# CHAPTER 29

## ESTIMATES OF COSTS AND FAIR EX-WORKS PRICES OF FORMULATIONS

29.1. The costs of formulations have been developed more or less on lines similar to those adopted in the case of basic drugs. In assessing costs the usage factor for materials has been allowed as per company's formulae and valued at appropriate prices. The conversion charges have been suitably modified to take into account the variations in the levels of estimated production, grade increments, known increases in labour charges on account of awards, etc. Packing cost has been developed on the basis of the existing packing methods. The incidence of selling expenses varies from company to company and is, in our view, rather on the high side. We have therefore restricted the selling expenses to a level equivalent to 15% of the total factory cost for reasons given in chapter 30.

29.2. In the computation of return, however, a departure has been made. Formulations are manufactured by units both big and small, housed in own buildings or in rented premises or even in a small size laboratories. There are units whose investments are not substantial or commensurate with the volume of work done with manual labour. Any margin of return based on such investments would be unremunerative and also unrealistic. Further, the peculiar features which dominate the marketing activities of formulators warrant consideration for providing return in a different manner so as to cover varying scales of discounts to the trade, the wholesalers, the medical practitioners and the retailers. The margin should be such as would absorb these elements besides leaving a fair profit for a formulator, either in the large scale or the small scale sector of the industry.

29.3. Till 1962, companies were fixing their own consumer prices and were offering varying rates of discounts to different classes of consumers/traders. When price control came into force in April, 1963, the prices of formulations of different companies were frozen at the levels then existing. This resulted in anomalies in the structure of prices for the same make of formulation marketed by the different companies either under generic

names or brand names inasmuch as the cost of production in various companies of the same formulation from a specific drug might marginally fluctuate or be even identical while the corresponding selling prices might differ widely between units The cost study has thrown up in greater relief such anomalies Where the existing formulation prices were higher than the assessed cost of production, an endeavour has been made to bring down the differentials to a uniform level by adopting a common approach

29 4 The future costs and fair ex-works prices of formulations have been developed on the following lines

29 4 1. **Basic Drug in Formulation.**—For assessing the quantities of basic drug used in the formulations, as stated earlier, the usage factor has been adopted on the basis of company's formula The prices of these basic drugs have been taken at the levels of the future fair selling prices estimated by us In the case of formulators who are manufacturers of basic drug also, two alternatives were available, viz , (a) to adopt the cost of the basic drug and then take it over to the cost element of the formulation and (b) to adopt the ex-factory price of the basic drug for working out the cost of the formulation If the first alternative is adopted the unit would be deprived of the return on the manufacturing cost of the basic drug, since it would be entitled to only a return on the formulation On the other hand if the second alternative is adopted it would give the unit a greater advantage than other formulators, inasmuch as the element of material cost of the basic drug would in itself be lower than that for other formulators, who purchase basic drug from others This would not only be unfair to the manufacturer in so far as his activity of basic drug manufacture is concerned but also to other formulators, since they would be placed at a disadvantage in the matter of the pricing of the basic drug We have therefore adopted the second alternative in order that on the manufacture of the basic drug the rate of return equivalent to what has been allowed will be available to the manufacturer as profit on that portion of the activity which relates to the basic drug manufacture alone The element of cost of the basic drug in a formulation would also thus be equivalent to those of other formulators Selling expenses as well as packing charges have however been excluded in all such cases, where the basic drug manufacturer is also the formulator This course was all the more necessary in view of the fact that the employed capital on the basic drug manufactured has been isolated and return on this capital is available only for basic drug

manufacturing activity; similarly the return on formulating activity has also been isolated and is confined to the formulating activity only. Had the two activities been combined and a single return proposed, it may have been possible to adopt only the cost of basic material used and amalgamate the cost of conversion both for the basic drug and for the formulation. Adoption of a different basis for pricing of the basic drug in the formulation would also have been unfair since the aim is to have as uniform a price for formulations as possible irrespective of the fact whether these are produced by a basic drug manufacturer or mere formulator. In certain cases formulations were being made from imported drugs which were available at a much lower price than the indigenous drugs. Since we have costed basic drugs produced by indigenous units and formulators as based on these drugs we have adopted the price of the indigenous drug and not that of the imported material for arriving at the cost of the corresponding formulation. Our study of the cost of formulations was in relation to that of basic drugs and not in isolation and we have therefore been precluded from adopting material cost of the same basic drugs imported and used in formulations. Should any formulation continue to be manufactured with imported material these cost would not apply and fresh costings for the same would need to be made. Here the basic drug content has been valued at the price arrived at for that unit.

29.4.2. **Other chemicals.**—In addition to basic drugs, certain other chemicals and excipients are used in formulations depending on the formula adopted by each formulator. The costs of these items have been based on the current prices and applied on usages according to the company's formula with modifications, wherever found necessary.

29.4.3. **Conversion charges.**—This element covers labour, salaries, power and fuel, depreciation, factory and administrative overheads, research expenses, etc. It is not large and therefore its detailed break-up was not regarded as essential.

29.4.4. **Packing.**—Many formulators hold the view that to sustain the competition, one practical method is to make packings more attractive in order to help improve sales. A keen competition between formulators has led them to devise distinctive packings which may endue with aesthetic appeal. Under the existing conditions we do not consider it appropriate to make any reduction in the packing costs incurred by the companies,

particularly when their selling expenses have been restricted Accordingly, packing costs have been allowed as claimed by the companies.

29 4 5 **Royalty.**—Wherever a Royalty Agreement exists, the appropriate quantum has been allowed.

29 4 6 **Selling expenses.**—During the actual period the incidence of selling expenses was worked out on the basis of the amounts spent by each unit under (i) salaries, D A etc of the medical representatives who tour extensively for exploring the market, (ii) advertisement in different media, viz , cinema slides, films, medical journals, magazines, wall posters, etc , (iii) literature and other printed matters distributed to the doctors, (iv) samples to doctors, hospitals, etc , and (v) other expenses, such as selling department's salaries, and expenses in the sales organisation T [illegible] C
ter 22 W [illegible]
the future [illegible]
*factory costs* [illegible]

29 4 7 **Outward freight**—Some of the formulators have an arrangement whereby the prices are determined ex destination and the freight charged is borne by themselves The incidence of this item is only nominal and has been shown as an item of cost wherever it has been incurred In cases where freight is not charged as an item of cost it will be covered either by the return allowed to the formulator or from the margin of the wholesaler and the retailer

29 4 8 **Excise duty.**—Excise duty is leviable only on such formulations as are sold under a "Brand Name" and has been provided for at the existing rates No excise duty is, however, payable on formulations with "generic" names

29 4 9 **Return.**—For reasons already mentioned in Chapter 31 we have allowed return in the form of mark up over the total cost of sales This has been included in the estimates for future prices of formulators

29 4 10 **Margin.**—The drugs have been distinguished under two categories viz , (i) ethical and (ii) non-ethical drugs In ethical drugs are included items which are pharmacopoeial and normally administered under medical advice After examining the evidence before us and in consultation with our Assessors we have provided for commission for ethical drugs

at 25 per cent, i.e., 15 per cent to the retailer and 10 per cent to other intermediaries and for non-ethical drugs at 15 per cent of which 10 per cent is for the retailer and 5 per cent for other intermediaries.

29.4.11. **Overages and overfills.**—Have been allowed depending upon the actual practice obtaining in each company and also the drug source. By and large this is upto 5 per cent in the case of capsules and vials. As regards ampoules this has been allowed upto 10 per cent and somewhat higher in the case of ampoules containing Vitamin B since this drug is said to deteriorate more quickly than others.

29.4.12. It should have been expected that since formulating operations are more or less uniform they would not call for any complicated operations capable of variation in techniques or processes and reactions and that the conversion cost would more or less be uniform but we find that there are sharp disparities owing to the capital and cost structure of different units. In the case of plain tablets weighing upto 100 mg. the cost of tableting varies from Rs. 1.36 to Rs. 4.40 per 1000 tablets. For tablets from 101 to 250 mg. in weight the rate varies from Rs. 4.57 to Rs. 4.69, the range in the former being very high. For capsules of 250 mg. the cost of capsuling for 100 capsules varies from Re. 0.32 to Rs. 4.12. Similar variations have been discovered in the case of ampoules for ampoule of 1 ml. the range is from Re. 0.04 to Re. 0.075; and for those of 5 ml. Re. 0.13 to Re. 0.69. In the case of vials of 5.00 cc, the vialing cost is from Re. 0.02 to Re. 0.08 and for those of 15 cc it is from Re. 0.8 to Re. 0.11. The cost of making dry powder in the form of granules in packs of 500 grams it is from Rs. 1.49 to Rs. 5.08 and the cost of 1000 grams is also within this range. Since the cost structure of each unit is different, it is not possible to apply any single rate for such processes and our estimates have been based on the actual cost for each unit. As we have adopted the lowest cost consistent with the standing and efficiency of the manufacturer we expect that in course of time the higher cost units will achieve a degree of parity with the lower cost units and conversion costs will eventually even out.

29.4.13. Packing costs have been shown separately and the analysis relates only to the material cost since the conversion cost has been already included in the relevant heads for the particular items.

29.5. For the enquiry we selected 39 single drug formulations and 10 multiple drug formulations under 30 brand names for

osting However, when our Cost Accounts Officers visited he units selected for costing, they discovered that some of the ormulations which had originally been suggested to us were ither not being manufactured or their manufacture had been iven up It has thus not been possible to cost the following ems .—

*ingle Drug formulations*

Dihydrostreptomycin Sulphate Injection

Chlortetracycline Ointment

Chlortetracycline Supersoid Powder

Chloroquin Sulphate Tablets (contain Chloroquin Sulphate for which no price was fixed.)

P.A.S. Sodium Tablets

Calcium PAS granules

*Multiple Drug Formulations'*

| | |
|---|---|
| CRYS 8 Injection (Sarabhai Chemicals)<br>CRYS-12 Injection (Sarabhai Chemicals) | Not being manufactured |
| Streptoduocin Injection (Hindustan Antibiotics) | Not to be manufactured in future |
| Duostrep (Merck Sharp) . . . | Contains Di hydrostreptomycin for which price should not be fixed |
| MYSTREPTON Injection (Glaxo) . | Not manufactured |
| Chlorostrep Suspension (Parke-Davis) . | Not manufactured |
| Tetrachlore (Gurco Pharma)* | Not manufactured |
| Precin fortified with Opthalmic Ointment (Alembic Chemical) | Not manufactured |
| Tequinopil (OPIL) | The unit was dropped for costing |
| Dinochlor (Bengal Immunity) | Not manufactured |
| Nivembin (May & Baker) . | Not manufactured |
| Diquinate (Martin & Harris) | Not manufactured |
| Combination of I N H and P.A S . | Combination differs from company to company |

*(We have, however, substituted this item by Enterocycline manufactured by Dey's Medical )

29.6. Of the 28 units which manufacture formulations, seven are small scale units, viz.,

Neogy Labs.

Sunita Laboratories

Alliance Trading

Khandelwal Laboratories

Cadila Laboratories

Gurco Pharma

Gujarat Pharmaceuticals

In the case of one of these units, namely, Gurco Pharma, the price of formulations were found to be higher than those of others. Being a small scale unit the price of its products ought to have been lower in respect of these. This unit incurred a loss in the year for which it was costed and this is the only one of all the units surveyed by us which has reported a loss. The other unit viz., Gujarat Pharmaceuticals has shown profits out of all proportion to its invested capital. But its cost of production also is generally higher than those of other formulators. We have therefore not taken these units into consideration in arriving at the fair ex-works price or retail price. The disproportion in the costs of these units is apparent from the statements which follow.

29.7. **Fair selling price.**—The ex-works prices for the future worked out on the above lines for the representative formulations in standard pack are exhibited in Table 29.1.

# TABLE 29 1

*Estimated fair retail prices of formulations*

(In Rupees)

| Name of Manufacturer / Product | Pack size | Materials | Conversion cost | Total factory cost | Selling expenses | Outward freight | Total cost of sales | Mark up | Margin | Excise duty | Fair retail price | Existing price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| *1 Vitamin—A* | | | | | | | | | | | | |
| A. INJECTIONS | | | | | | | | | | | | |
| I *Glaxo Labs* | | | | | | | | | | | | |
| PREPALIN AMPOULTS 1 lac i u | 6×1ml | 0 70 | 1 10 | 1 80 | 0 27 | | 2 07 | 0 31 | 0 36 | 0 15 | 2 89 | 5 28 |
| II *Unichem Labs* | | | | | | | | | | | | |
| MASSIVE A 1 lac i u /ml . . | 6×1ml | 0 41 | 0 96 | 1 37 | 0 21 | 0 03 | 1 61 | 0 24 | 0 28 | 0 12 | 2 25 | 4 75 |
| B TABLETS | | | | | | | | | | | | |
| *Roche Products* | | | | | | | | | | | | |
| AROVIT 50 000 i u. 200 . | 25 strips of 8 tabs | 6 52 | 5 92 | 12 44 | 1 87 | | 14 31 | 2 15 | 2 47 | 1 06 | 19 99 | 52 70 |
| 2 (i) *Vitamin B12* (Cyanocobalamin) | | | | | | | | | | | | |
| INJECTIONS | | | | | | | | | | | | |
| I *Dey's Medical* | | | | | | | | | | | | |
| VITADOUSE 500 mcg/ml | 5 ml | 0 36 | 0 48 | 0 84 | 0 13 | 0 04 | 1 01 | 0 15 | 0 17 | 0 07 | 1 40 | 4 18 |

TABLE 29.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INJECTIONS—(*Contd.*) | | | | | | | | | | | | |
| II. *Gurco Pharma* | | | | | | | | | | | | |
| VITAMIN B12 500 mcg/ml . . | 5ml | 0.35 | 0.93 | 1.28 | 0.19 | .. | 1.47 | 0.22 | 0.25 | .. | 1.94 | 1.87 |
| III. *Cadila Labs.* | | | | | | | | | | | | |
| COBALMIN 500 mcg/ml . . | 5ml | 0.43 | 0.61 | 1.04 | 0.16 | 0.07 | 1.27 | 0.19 | 0.22 | 0.09 | 1.77 | 2.75 |
| IV. *Biological Evans* | | | | | | | | | | | | |
| CYANACOBALAMIN 500 mcg/ml | 5ml | 0.38 | 0.51 | 0.89 | 0.13 | 0.01 | 1.03 | 0.16 | 0.18 | .. | 1.37 | 2.00 |
| V. *Glaxo Labs.* | | | | | | | | | | | | |
| MACRABIN 500 mcg/ml . . | 5ml | 0.34 | 0.66 | 1.00 | 0.15 | .. | 1.15 | 0.17 | 0.20 | 0.09 | 1.61 | 5.28 |
| VI. *Merck Sharp* | | | | | | | | | | | | |
| REDISOL 500 mcg/ml . . . | 5ml | 0.34 | 0.72 | 1.06 | 0.16 | .. | 1.22 | 0.18 | 0.21 | 0.09 | 1.70 | 5.28 |
| VII. *Unichem Labs.* | | | | | | | | | | | | |
| CYANOCOBALAMIN 500 mcg/ml | 5ml | 0.44 | 0.59 | 1.03 | 0.15 | 0.03 | 1.21 | 0.18 | 0.21 | .. | 1.60 | 4.60 |
| VIII. *Alembic Chemical* | | | | | | | | | | | | |
| CYCOBAL 500 mcg/ml . . | 5 ml | 0.37 | 0.65 | 1.02 | 0.15 | 0.03 | 1.20 | 0.18 | 0.21 | 0.09 | 1.68 | 5.31 |
| IX. *Zandu* | | | | | | | | | | | | |
| VITAMIN B12 500 mcg/ml . . | 10ml | 0.74 | 0.63 | 1.37 | 0.21 | .. | 1.58 | 0.21 | 0.27 | .. | 2.09 | 3.70 |
| X. *Gujarat Pharmaceuticals* | | | | | | | | | | | | |
| VITAMIN B-12 500 mcg/ml . . | 10ml | 0.74 | 1.31 | 2.05 | 0.31 | .. | 2.36 | 0.35 | 0.41 | .. | 3.12 | 4.35 |
| XI. *Khandelwal Labs.* | | | | | | | | | | | | |
| CYNOPLON 500 mcg/ml . . | 10ml | 0.71 | 0.94 | 1.63 | 0.25 | .. | 1.90 | 0.29 | 0.33 | 0.14 | 2.66 | 5.0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2 (ii) Vitamin B12(b)—(Hydroxycobalamin) | | | | | | | | | | |
| INJECTIONS | | | | | | | | | | | | |
| I *Glaxo Labs* | | | | | | | | | | | | |
| MACRABIN H 500 mcg/ml | 5ml | 0 50 | 0 67 | 1 17 | 0 18 | | 1 35 | 0 20 | 0 23 | 0 10 | 1 88 | 5 |
| II *Merck Sharp* | | | | | | | | | | | | |
| REDISOL-H 500 mcg/ml | 5ml | 0 66 | 1 62 | 2 78 | 0 34 | | 2 02 | 0 39 | 0 45 | 0 19 | 3 65 | 6 0 |
| III *Unichem* | | | | | | | | | | | | |
| UNI B12 H 500 mcg/ml | 5ml | 0 50 | 0 49 | 0 99 | 0 15 | | 1 14 | 0 17 | 0 20 | 0 08 | 1 59 | 4 60 |
| IV *Gujarat Pharmaceuticals* | | | | | | | | | | | | |
| COBIN H 500 mcg/ml | 5ml | 1 00 | 0 95 | 1 95 | 0 29 | | 2 24 | 0 34 | 0 39 | 0 17 | 3 14 | 4 37 |
| | | | | 5 Vitamin C | | | | | | | | |
| TABLETS | | | | | | | | | | | | |
| I *Dey's Medical* | | | | | | | | | | | | |
| ASCORBIC ACID 100 mg | 1 000 | 8 98 | 2 01 | 10 99 | 1 65 | 0 21 | 12 85 | 1 93 | 2 22 | | 17 00 | 18 0 |
| II *Curco Pharma* | | | | | | | | | | | | |
| ASCORBIC ACID 100 mg | 1 000 | 8 72 | 10 19 | 18 91 | 2 84 | | 21 75 | 3 26 | 3 75 | | 28 76 | 15 00 |
| III *Cadila Labs* | | | | | | | | | | | | |
| ASCORBIC ACID 100 mg | 1 000 | 8 19 | 3 91 | 12 10 | 1 82 | 0 41 | 14 33 | 2 15 | 2 47 | | 18 95 | 16 1[illegible] |
| IV *Glaxo Labs* | | | | | | | | | | | | |
| CELIN 100 mg | 1 000 | 7 92 | 3 47 | 11 39 | 1 71 | | 13 10 | 1 97 | 2 26 | 0 97 | 18 30 | 26 41 |
| V *Zandu* | | | | | | | | | | | | |
| VITAMIN C 100 mg | 1 000 | 9 87 | 4 59 | 14 46 | 2 17 | 0 30 | 16 93 | 2 54 | 2 92 | | 22 39 | 24 44 |
| VI *Gujarat Pharmaceuticals* | | | | | | | | | | | | |
| VITAMIN C 500 mg | 250 | 0 09 | 2 02 | 11 11 | 1 67 | | 12 78 | 1 92 | 2 21 | | 16 91 | 16 |

TABLE 29.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. TABLETS—(*Contd.*) | | | | | | | | | | | | |
| VII. *Alembic Chemical* | | | | | | | | | | | | |
| CIVINAL 50 mg . . . | 1,000 | 4.96 | 7.26 | 12.22 | 1.83 | .. | 14.05 | 2.11 | 2.42 | 1.05 | 19.63 | 13.62 |
| VIII. *Khandelwal Labs.* | | | | | | | | | | | | |
| VITAMIN C 100 mg. . . . | 500 | 4.53 | 4.91 | 9.44 | 1.42 | .. | 10.86 | 1.63 | 1.87 | .. | 14.36 | 9.50 |
| IX. *Roche Products* | | | | | | | | | | | | |
| REDOXON 500 mg . . . | 10×10 | 3.86 | 4.29 | 8.15 | 1.22 | .. | 9.37 | 1.41 | 1.62 | 0.70 | 13.10 | 23.72 |
| X. *Sarabhai Chemicals* | | | | | | | | | | | | |
| ASCORBICIN 250 mg . . . | 100 | 2.07 | 1.44 | 3.51 | 0.53 | 0.15 | 4.19 | 0.63 | 0.72 | 0.31 | 5.85 | 6.60 |
| B. INJECTIONS | | | | | | | | | | | | |
| I. *Glaxo Labs.* | | | | | | | | | | | | |
| CELIN 100 mg . . . . | 25×1ml | 0.23 | 3.29 | 3.52 | 0.53 | .. | 4.05 | 0.61 | 0.70 | 0.30 | 5.66 | 7.92 |
| II. *Roche Products* | | | | | | | | | | | | |
| REDOXON 100 mg . . . | 50×2ml | 0.54 | 7.86 | 8.40 | 1.26 | .. | 9.66 | 1.45 | 1.67 | 0.72 | 13.50 | 20.82 |
| | | | | *4. Sulphadiazine* | | | | | | | | |
| TABLETS | | | | | | | | | | | | |
| I. *Dey's Medical* | | | | | | | | | | | | |
| SULPHADIAZINE 500 mg . . | 500 strips box. | 15.13 | 3.61 | 18.74 | 2.81 | 0.26 | 21.81 | 3.27 | 6.27 | .. | 31.35 | 20.00 |
| II. *Cadila Labs.* | | | | | | | | | | | | |
| SULPHADIAZINE 500 mg . . | 500 | 15.17 | 2.89 | 18.06 | 2.71 | 0.73 | 21.50 | 3.23 | 6.18 | .. | 30.91 | 28.75 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| III. *May & Baker* . | | | | | | | | | | | | |
| SULPHADIAZINE 500 mg . . | 50×10 | 14 79 | 4 32 | 19 11 | 2 87 | 0 50 | 22,48 | 3.37 | 6 46 | .. | 32 31 | 31 69 |
| IV *Khandelwal Labs* | | | | | | | | | | | | |
| SULPHADIAZINE 500 mg . . | 500 | 15 74 | 4 56 | 20 10 | 3 02 | 0 43 | 23 55 | 3 55 | 6 78 | | 33 86 | 28 00 |

5 *Chloramphenicol* ,

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CAPSULES | | | | | | | | | | | | |
| I. *Dey's Medical* | | | | | | | | | | | | |
| ENTEROMYCETIN 250 mg . | 100strips | 9 49 | 7 20 | 16 69 | 2 50 | 0 37 | 19 56 | 2 93 | 5 62 | 1 58 | 29 69 | 44 04 |
| II *Gurco Pharma* | | | | | | | | | | | | |
| GURCOMYCETIN 250 mg . | 100 | 9 20 | 9 43 | 18 63 | 2 79 | | 21 42 | 3.21 | 6 16 | 1 73 | 32 52 | 30 00 |
| *Boehringer Knoll* | | | | | | | | | | | | |
| LORAMPHENICOL 250 mg . | 100 | 9 80 | 4 98 | 14 78 | 2 22 | | 17 00 | 2 55 | 4 88 | . | 24 43 | 43 52 |
| *Inishan* | | | | | | | | | | | | |
| IMYCETIN VF 250 mg . . | 100 | 10 66 | 6 12 | 16 78 | 2 52 | 0 28 | 19 58 | 2 64 | 5 06 | 1 53 | 28 81 | 32 20 |
| 'mbic Chemical | | | | | | | | | | | | |
| COPHENICOL 250 mg | 12 | 0 92 | 1 01 | 1 93 | 0 29 | 0 04 | 2 26 | 0 34 | 0 65 | 0 18 | 3 43 | 6 81 |
| VI *Cadila Labs* | | | | | | | | | | | | |
| CADIMYCITIN 250 mg . | 12 | 1 59 | 0 80 | 2 39 | 0 36 | . | 2 75 | 0 41 | 0 79 | 0 22 | 4 17 | 4 00 |
| *Gujarat Pharmaceuticals* | | | | | | | | | | | | |
| ICLOR 250 mg . . | 125 | 11 47 | 10 80 | 22 27 | 3 34 | | 25 61 | 3 84 | 7 36 | 2 07 | 38 88 | 27 50 |
| " | | | | | | | | | | | | |
| AMEX 250 mg . . | 100 | 10 19 | 2 52 | 12 71 | 1 91 | | 14 62 | 2 19 | 4 20 | 1 18 | 22 19 | 42 25 |

TABLE 29.1—*Contd.*

| 1 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | *6. Amodiaquine* | | | | | | | | |
| TABLETS | | | | | | | | | | | | |
| *Parke-Davis* | | | | | | | | | | | | |
| CAMOQUINE 0.2 gr. | 250 | 7.32 | 2.48 | 9.80 | 1.47 | 0.38 | 11.65 | 1 75 | 2.01 | .. | 15.41 | 11.19 |
| | | | | *7. Chloroquine Phosphate* | | | | | | | | |
| TABLETS | | | | | | | | | | | | |
| I. *Zandu* | | | | | | | | | | | | |
| CHLOKOQUINE PHOSPHATE 250 mg | 1000 | 67.90 | 5.35 | 73.25 | 10.99 | 0.30 | 84.54 | 12.68 | 11.50 | .. | 111.80 | 90.00 |
| II. *Bengal Immunity* | | | | | | | | | | | | |
| CHLOROQUINE PHOSPHATE 250 mg | 1000 | 64.52 | 7.81 | 72.33 | 10.85 | 2.57 | 85.75 | 12.86 | 14.79 | .. | 113.40 | 90.00 |
| III. *Gujarat Pharmaceuticals* | | | | | | | | | | | | |
| CHLOROQUIN PHOSPHATE 250 mg | 1000 | 65.50 | 12.60 | 78.10 | 11.72 | .. | 99.82 | 13.47 | 15.19 | .. | 110.78 | 19.50 for 500 tab. |
| | | | | *8. P.A.S.* | | | | | | | | |
| GRANULES | | | | | | | | | | | | |
| I. *Alliance Trading* | | | | | | | | | | | | |
| SODIUM PAS 100% | 500gr. | 15.64 | 1.99 | 17.63 | 2.64 | 0.26 | 20.53 | 3.08 | 5.90 | .. | 29.51 | 17.50 |
| II. *Gurco Pharma* | | | | | | | | | | | | |
| SODIUM PAS 65% | 500gr. | 11.90 | 5.73 | 17.63 | 2.64 | .. | 20.27 | 3.04 | 5.83 | .. | 29.11 | 21.87 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| III *Biological Evans* | | | | | | | | | | | | |
| SODIUM PAS 65% | 1000gr | 22 76 | 5 26 | 29 02 | 4 20 | 0 28 | 37 50 | 4 88 | 9 35 | | 46 73 | 42 87 |
| SODIUM PAS 80% | 1000gr | 27 99 | 5 26 | 33 16 | 4 97 | 0 28 | 38 41 | 5 76 | 11 04 | | 55 21 | 48 00 |
| IV *Hoechst* | | | | | | | | | | | | |
| AMINOX GRANULES 48 7% (Sod PAS) | 250gr | 5 82 | 3 11 | 8 93 | 1 34 | 0 09 | 10 36 | 1 55 | 2 98 | 0 28 | 15 17 | 11 08 |
| V *Pfizer* | | | | | | | | | | | | |
| (i) P A S ACID 70% | 100gr | 3 09 | 1 35 | 4 44 | 0 67 | | 5 11 | 0 77 | 1 47 | | 7 35 | 6 37 |
| (ii) SOD P A S 80% | 100gr | 2 65 | 1 42 | 4 07 | 0 61 | | 4 68 | 0 70 | 1 35 | | 6 73 | 6 37 |

9 (a) *Iodo-Chlor Hydroxy Quinoline*

TABLETS

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I *East India Pharmaceutical* | | | | | | | | | | | | |
| ENTEROQUINOL 250 mg | 500 strips | 10 22 | 1 97 | 15 19 | 2 28 | 1 11 | 18 58 | 2 79 | 3 21 | 0 16 | 25 01 | 43 00 |
| II *Dey's Medical* | | | | | | | | | | | | |
| DEQUINOL 250 mg | 500 strips | 6 13 | 3 41 | 9 54 | 1 43 | 0 19 | 11 16 | 1 67 | 1 92 | 0 28 | 15 03 | 27 30 |
| III *Alliance Trading* | | | | | | | | | | | | |
| HALOGENOL 250 mg | 500 phial | 5 68 | 2 65 | 8 33 | 1 25 | 0 34 | 9 92 | 1 49 | 1 71 | 0 25 | 13 37 | 29 50 |
| IV *Unichem* | | | | | | | | | | | | |
| IODOCHLOR HYDROXYQUIN 250 mg | 500 | 9 09 | 1 30 | 10 39 | 1 56 | 0 21 | 12 16 | 1 82 | 2 10 | | 16 08 | 28 75 |
| V *Alembic Chemicals* | | | | | | | | | | | | |
| ALCHLOQUIN 250 mg | 500 | 7 41 | 5 43 | 12 84 | 1 93 | 0 74 | 15 51 | 2 33 | 2 68 | 0 38 | 20 90 | 25 00 |
| VI *Zandu* | | | | | | | | | | | | |
| IODOCHLOR HYDROXYQUIN 250 mg | 1000 | 12 63 | 5 35 | 17 98 | 2 70 | 0 30 | 20 98 | 3 15 | 3 62 | | 27 75 | 30 00 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| II *Alembic Chemical* | | | | | | | | | | | | |
| (i) INSULIN INJ IP 40 u/ml | 10 ml | 2 37 | 0 68 | 3 05 | 0 46 | 0 02 | 3 53 | 0 5 3 | 0 61 | | 4 67 | 5 28 |
| (ii) INSULIN PROTAMIZINC 40 u/ml . | 10 ml | 2 57 | 0 75 | 3 32 | 0 50 | 0 03 | 3 85 | 0 58 | 0 66 | | 5 09 | 5 00 |
| (iii) INSULIN ISOPHANE (NPH) 40 u/ml | 10 ml | 2 55 | 0 75 | 3 30 | 0 50 | 0 04 | 3 84 | 0 58 | 0 66 | | 5 08 | 7 00 |
| III *Unichem* | | | | | | | | | | | | |
| (i) INSULIN INJ IP 40 u/ml | 10 ml | 2 86 | 0 76 | 3 62 | 0 54 | 0 03 | 4 19 | 0 63 | 0 72 | | 5 54 | 4 15 |

11 *I N H*

TABLETS

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I *Dey's Medical* | | | | | | | | | | | | |
| ISONIAZID 100mg . . . | 1000 | 10 25 | 2 02 | 12 27 | 1 84 | 0 21 | 14 32 | 2 15 | 4 12 | | 20 59 | 24 00 |
| II *Cadila Labs* | | | | | | | | | | | | |
| CADIZID 100 mg . . | 1000 | 9 17 | 3 91 | 13 08 | 1 96 | 0 59 | 15 63 | 2 34 | 4 49 | 0 42 | 22 88 | 23 55 |
| III *Gujarat Pharmaceuticals* | | | | | | | | | | | | |
| ISONIAZID 100 mg . . | 1000 | 9 68 | 8 57 | 18 25 | 2 74 | 0 11 | 21 10 | 3 17 | 6 07 | | 30 54 | 22 00 |
| IV *Biological Evans* | | | | | | | | | | | | |
| I N H, 100 mg . . . | 1000 | 10 23 | 3 48 | 13 71 | 2 06 | 0 05 | 15 82 | 2 37 | 4 55 | | 22 74 | 17 15 |
| V *Glaxo Labs* | | | | | | | | | | | | |
| PELAZID 100 mg . | 1000 | 9 84 | 3 22 | 13 06 | 1 96 | | 15 02 | 2 25 | 4 32 | 0 40 | 21 99 | 25 47 |
| VI *Pfizer* | | | | | | | | | | | | |
| ISONEX 100 mg . . | 100 Box × 100 | 115 93 | 85 38 | 201 31 | 30 20 | .. | 231 51 | 34 73 | 66 56 | 6 24 | 339 04 | 25 47 per 1000 |
| VII *Zandu* | | | | | | | | | | | | |
| ISOZIDE 100 mg . . | 1000 | 10 92 | 4 59 | 15 51 | 2 33 | 0 30 | 18 14 | 2 72 | 5 22 | 0 49 | 26 57 | 24 50 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VIII *Unichem* | | | | | | | | | | | | |
| UNALGEN HC 5mg | 100 | 7 07 | 0 71 | 7 78 | 1 17 | 0 18 | 9 13 | 1 37 | 2 63 | 0 74 | 13 87 | 24 15 |
| IX *Zandu* | | | | | | | | | | | | |
| PREDNISOLONE 5mg | 1000 | 66 90 | 4 59 | 71 49 | 10 72 | 0 50 | 82 51 | 12 38 | 33 72 | | 128 61 | 15 00 per 100 |
| X *Alembic Chemical* | | | | | | | | | | | | |
| PRECIN 5mg | 10 | 0 61 | 0 39 | 1 00 | 0 15 | 0 01 | 1 16 | 0 17 | 0 33 | 0 09 | 1 75 | 2 72 |
| | | | | 13 *Tolbutamide* | | | | | | | | |
| TABLETS | | | | | | | | | | | | |
| I *Boehringer Knoll* | | | | | | | | | | | | |
| ARTOSIN 500mg | 1000 | 39 20 | 2 94 | 42 14 | 6 32 | | 48 46 | 7 27 | 8 56 | 3 01 | 67 70 | 219 60 |
| II *Hoechst* | | | | | | | | | | | | |
| RASTINON 500mg | 1000(Pack of 100×10) | 37 77 | 36 06 | 73 83 | 11 07 | 1 53 | 85 45 | 12 97 | 14 91 | 6 43 | 120 76 | 219 60 |
| | | | | 14 *Tetanus Anti Toxin* | | | | | | | | |
| INJECTIONS | | | | | | | | | | | | |
| I *Bengal Immunity* | | | | | | | | | | | | |
| (i) 1500 i u | 1ml | 1 21 | 0 27 | 1 48 | 0 22 | 0 09 | 1 79 | 0 27 | 0 31 | | 2 37 | 2 88 |
| (ii) 10000 i u | 1ml | 7 49 | 0 27 | 7 76 | 1 16 | 0 09 | 9 01 | 1 35 | 1 55 | | 11 91 | 13 84 |
| II *Biological Evans* | | | | | | | | | | | | |
| (i) 1500 i u | 1ml | 0 63 | 0 11 | 0 74 | 0 11 | 0 01 | 0 86 | 0 13 | 0 15 | | 1 14 | 2 10 |
| (ii) 10000 i u | 1ml | 4 22 | 0 48 | 4 70 | 0 71 | 0 03 | 5 44 | 0 82 | 0 94 | | 7 20 | 12 00 |
| | | | | 15 *Chlorpropamide* | | | | | | | | |
| TABLETS | | | | | | | | | | | | |
| *Pfizer* | | | | | | | | | | | | |
| DIABENESE 250mg | 100 | 2 53 | 2 22 | 4 75 | 0 71 | | 5 46 | 0 82 | 0 94 | 0 41 | 7 63 | 59 28 |

TABLE 29.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VIII. *Sarabhai Chemicals* | | | | | | | | | | | | |
| NYDRAZID 100 mg. . . . | 1000 Bottles | 10.41 | 6.82 | 17.23 | 2.58 | 0.36 | 20.17 | 3.02 | 5.80 | 0.54 | 29.53 | 25.79 |
| IX. *Alembic Chemical* | | | | | | | | | | | | |
| ALZID 100 mg. . . . . | 100 | 0.98 | 1.97 | 2.95 | 0.44 | 0.02 | 3.41 | 0.51 | 0.98 | 0.09 | 4.99 | 3.25 |
| TABLETS | | | | 12. *Prednisolone* | | | | | | | | |
| I. *Dey's Medical* | | | | | | | | | | | | |
| PREDNISOLONE 5mg : : | 100 Strips | 6.08 | 0.85 | 6.93 | 1.04 | 0.19 | 8.16 | 1.22 | 2.35 | .. | 11.73 | 22.20 |
| II. *Cadila Labs.* | | | | | | | | | | | | |
| PREDNISOLONE 5mg. . . | 500 | 30.51 | 2.56 | 33.07 | 4.96 | 2.18 | 40.21 | 6.03 | 11.56 | .. | 57.80 | 23.00 per 100 |
| III. *Gujarat Pharmaceuticals* | | | | | | | | | | | | |
| PREDNISOLONE 5mg . . | 100 Strips | 6.05 | 6.92 | 12.97 | 1.95 | 0.16 | 15.08 | 2.26 | 4.34 | .. | 21.68 | 18.70 |
| IV. *Wyeth Labs.* | | | | | | | | | | | | |
| WYSOLONE 5mg . . | 100 | 6.12 | 2.42 | 8.54 | 1.28 | 0.08 | 9.90 | 1.49 | 2.85 | 0.80 | 15.04 | 26.41 |
| V *Hoechst* | | | | | | | | | | | | |
| HOSTACORTIN-H 5mg . . | 10×10 | 6.15 | 2.40 | 8.55 | 1.28 | 0.12 | 9.95 | 1.49 | 2.86 | 0.80 | 15.10 | 24.00 |
| VI. *Glaxo Labs.* | | | | | | | | | | | | |
| PELTABECORLIN 5mg . . | 100 | 6.86 | 1.67 | 8.53 | 1.18 | .. | 8.71 | 1.47 | 2.82 | 0.79 | 14.79 | 26.59 |
| VII. *Pfizer* | | | | | | | | | | | | |
| DELTA CORTRIL 5mg . . | 100 | 6.31 | 1.09 | 7.40 | 1.11 | .. | 8.51 | 1.28 | 2.45 | 0.69 | 12.93 | 26.41 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VIII *Unichem* | | | | | | | | | | | | |
| UNALGEN HC 5mg | 100 | 7 07 | 0 71 | 7 78 | 1 17 | 0 18 | 9 13 | 1 37 | 2 63 | 0 74 | 13 67 | 24 15 |
| IX *Zandu* | | | | | | | | | | | | |
| PREDNISOLONE 5mg | 1000 | 66 90 | 4 59 | 71 49 | 10 72 | 0 30 | 82 51 | 12 38 | 33 72 | | 128 61 | 15 00 per 100 |
| X *Alembic Chemical* | | | | | | | | | | | | |
| PRECIN 5mg | 10 | 0 61 | 0 39 | 1 00 | 0 15 | 0 01 | 1 16 | 0 17 | 0 33 | 0 09 | 1 75 | 2 72 |
| 13 *Tolbutamide* | | | | | | | | | | | | |
| TABLETS | | | | | | | | | | | | |
| I *Boehringer Knoll* | | | | | | | | | | | | |
| ARTOSIN 500mg | 1000 | 39 20 | 2 94 | 42 14 | 6 32 | | 48 46 | 7 27 | 8 36 | 3 61 | 67 70 | 219 60 |
| II *Hoechst* | | | | | | | | | | | | |
| RASTINON 500mg | 1000(Pack of 100 x 10) | 37 77 | 36 06 | 73 83 | 11 07 | 1 55 | 85 45 | 12 97 | 14 91 | 6 43 | 120 76 | 219 60 |
| 14 *Titanus Anti Toxin* | | | | | | | | | | | | |
| INJECTIONS | | | | | | | | | | | | |
| I *Bengal Immunity* | | | | | | | | | | | | |
| (i) 1500 i u | 1ml | 1 21 | 0 27 | 1 48 | 0 22 | 0 09 | 1 79 | 0 27 | 0 31 | | 2 37 | 2 88 |
| (ii) 10000 i u | 1ml | 7 9 | 0 27 | 7 76 | 1 16 | 0 09 | 9 01 | 1 35 | 1 55 | | 11 91 | 13 84 |
| II *Biological Evans* | | | | | | | | | | | | |
| (i) 1500 i u | 1ml | 0 63 | 0 11 | 0 74 | 0 11 | 0 01 | 0 86 | 0 13 | 0 15 | | 1 14 | 2 10 |
| (ii) 10000 i u | 1ml | 4 22 | 0 48 | 4 70 | 0 71 | 0 03 | 5 44 | 0 82 | 0 94 | | 7 20 | 12 00 |
| 15 *Chlorpropamide* | | | | | | | | | | | | |
| TABLETS | | | | | | | | | | | | |
| *Pfizer* | | | | | | | | | | | | |
| DIABENESE 250mg | 100 | 2 53 | 2 22 | 4 75 | 0 71 | | 5 46 | 0 82 | 0 94 | 0 41 | 7 63 | 39 28 |

TABLE 29.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 16. *Pencillin* | | | | | | | | |
| INJECTIONS | | | | (i) *Potassium Penicillin-G* | | | | | | | | |
| *Hindustan Antibiotics* | | | | | | | | | | | | |
| POT. PEN. 'G' 10 lacs . | . 1 vial | 0.48 | 0.19 | 0.62 | 0.09 | 0.01 | 0.72 | 0.11 | 0.21 | .. | 1.04 | 1.06 |
| INJECTIONS | | | | (ii) *Sodium Penicillin-G* | | | | | | | | |
| I. *Alembic Chemical* | | | | | | | | | | | | |
| SOD. PEN. 'G' 5 lacs . | . 5 vials | 1.77 | 0.99 | 2.76 | 0.41 | 0.02 | 3.19 | 0.48 | 0.92 | .. | 4.59 | 3.39 |
| SOD. PEN. 'G' 10 lacs . | . 5 vials | 3.54 | 1.30 | 4.84 | 0.73 | 0.04 | 5.61 | 0.84 | 1.61 | .. | 8.06 | 5.60 |
| II. *Sarabhai Chemicals* | | | | | | | | | | | | |
| (i) PENICILLIN G Sodium-Squibbs 5 lacs . | . 5 vials | 2.22 | 2.52 | 4.74 | 0.71 | 0.06 | 5.51 | 0.83 | 1.59 | 0.15 | 8.08 | 6.91 |
| (ii) PENICILLIN G Sodium-Squibbs 10 lacs | . 10 vials | 4.39 | 2.93 | 7.32 | 1.10 | 0.09 | 8.51 | 1.28 | 2.45 | 0.23 | 12.47 | 11.40 |
| III. *Glaxo Labs.* | | | | | | | | | | | | |
| (i) CRYSTAPEN 5 lacs . | . 5 vials | 1.01 | 1.01 | 2.02 | 0.30 | .. | 2.32 | 0.35 | 0.67 | 0.06 | 3.40 | 3.46 |
| (ii) CRYSTAPEN 10 lacs | . 10 vials | 2.01 | 1.06 | 3.07 | 0.46 | .. | 3.53 | 0.53 | 1.02 | 0.10 | 5.18 | 5.70 |
| IV. *Dey's Medical* | | | | | | | | | | | | |
| (i) SOD. PEN. 'G' 5 lacs | . 1 vial | 0.21 | 0.20 | 0.41 | 0.06 | 0.02 | 0.49 | 0.07 | 0.14 | .. | 0.70 | 0.74 |
| (ii) SOD. PEN 'G' 10 lacs | . 1 vial | 0.42 | 0.21 | 0.63 | 0.09 | 0.04 | 0.76 | 0.11 | 0.22 | .. | 1.09 | 1.14 |
| V. *Merck Sharp* | | | | | | | | | | | | |
| (i) SOD. PEN 'G' 5 lacs | . 5 vials | 1.12 | 1.20 | 2.32 | 0.35 | .. | 2.67 | 0.40 | 0.77 | 0.07 | 3.91 | 3.45 |
| (ii) SOD. PEN. 'G' 10 lacs | . 5 vials | 2.28 | 1.17 | 3.45 | 0.52 | .. | 3.97 | 0.60 | 1.14 | 0.11 | 5.82 | 5.72 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VI *H ndustan Antibiotics* | | | | | | | | | | | | |
| SOD PEN 'G 10 lacs | 1 vials | 0 48 | 0 21 | 0 69 | 0 10 | 0 01 | 0 80 | 0 12 | 0 23 | | 1 19 | 0 94 |
| | | 16 ( ) *Procaine Penicill n G Fortified with Sod um* | | | | | | | | | | |
| INJECTION | | | | | | | | | | | | |
| I *Alembic Chemical* | | | | | | | | | | | | |
| (i) PROCAINE 3 lacs SODIUM 1 lac | 5 vials | 1 33 | 0 99 | 2 32 | 0 35 | 0 02 | 2 69 | 0 40 | 0 77 | | 3 86 | 2 75 |
| (ii) PROCAINE 15 lacs SODIUM 5 lacs | 5 v als | 6 66 | 1 53 | 8 19 | 1 23 | 0 06 | 9 48 | 1 42 | 2.73 | | 13 63 | 8 10 |
| II *Sarabhai Chem cals* | | | | | | | | | | | | |
| CRYS-4 PROCAINE 3 lacs SODIUM 1 lac | 10 v als | 1 66 | 2 19 | 3 85 | 0 58 | 0 06 | 4 19 | 0 67 | 1 29 | 0 12 | 6 57 | 5 50 |
| III *Pfizer* | | | | | | | | | | | | |
| (i) PPF-4 PROC 3 lacs POT 1 lac | 100 vials | 15 01 | 23 96 | 38 97 | 5 85 | | 44 82 | 5 72 | 12 89 | 1 21 | 65 64 | 56 15 |
| (ii) PPF 20 PROC 15 lacs POT 1 lac | 100 vials | 73 39 | 36 89 | 110 28 | 16 54 | .. | 126 82 | 19 02 | 36 46 | 3 42 | 185 72 | 190 00 |
| IV *Dey s Medical* | | | | | | | | | | | | |
| (i) PENACAINE SODIUM 1 lac PROCAINE 3 lacs | 1 vial | 0 15 | 0 20 | 0 35 | 0 05 | 0 02 | 0 42 | 0 06 | 0 12 | | 0 60 | 0 44 |
| (ii) PENACAINE SODIUM 5 lacs PROCAINE 15 lacs | 1 vial | 0 74] | 0 24 | 0 98 | 0 15 | 0 06 | 1 19 | 0 18 | 0 34 | | 1 71 | 1 30 |
| V *Glaxo Labs.* | | | | | | | | | | | | |
| SELCOPEN (i) SODIUM 1 lac PROCAINE 3 lacs | 5 v als | 0 79 | 1 03 | 1 82 | 0 27 | | 2 09 | 0 31 | 0 60 | 0 06 | 3 06 | 3 11 |
| (ii) SODIUM PEN 5 lacs PROCAINE PEN 15 lacs | 5 v als | 3 81 | 1 52 | 5 33 | 0 80 | | 6 13 | 0 92 | 1 76 | 0 17 | 8 98 | 9 17 |

TABLE 29.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VI. *Hindustan Antibiotics* | | | | | | | | | | | | |
| SODIUM PEN 1 lac / PROCAINE PEN 3 lacs } . . | 1 vial | 0.17 | 0.19 | 0.36 | 0.05 | 0.01 | 0.42 | 0.06 | 0.12 | .. | 0.60 | 0.58 |
| | | | 16 (iv) *Procaine Penicillin—'G'* | | | | | | | | | |
| A. INJECTIONS | | | | | | | | | | | | |
| *Hindustan Antibiotics* | | | | | | | | | | | | |
| PROC. PEN 'G' 15 lacs . . | 1 vial | 0.62 | 0.25 | 0.87 | 0.13 | 0.01 | 1.01 | 0.15 | 0.29 | .. | 1.45 | 1.51 |
| B. TABLETS | | | | | | | | | | | | |
| I. *Hindustan Antibiotics* | | | | | | | | | | | | |
| PENICILLIN V 65 mg. . . | 12 | 0.91 | 0.13 | 1.04 | 0.16 | 0.01 | 1.21 | 0.18 | 0.35 | .. | 1.74 | 1.85 |
| II. *May & Baker* | | | | | | | | | | | | |
| ORACYN 62.5 mg . . . | 10×10 | 6.38 | 1.73 | 8.11 | 1.22 | 0.10 | 9.43 | 1.41 | 2.71 | 0.25 | 13.80 | 20.78 |
| III. *Zandu* | | | | | | | | | | | | |
| SULPHATRACIN 65 mg. . . | 100 | 9.72 | 0.73 | 10.45 | 1.57 | 0.20 | 12.22 | 1.83 | 3.51 | 0.33 | 17.89 | 26.00 |
| | | | 17 *Tetracycline* | | | | | | | | | |
| A. CAPSULES | | | | | | | | | | | | |
| I. *Dey's Medical* | | | | | | | | | | | | |
| SUBAMYCIN 250 mg . . . | 100 (25×4 box) | 17.78 | 10.79 | 28.57 | 4.29 | 0.92 | 33.78 | 5.07 | 9.71 | 2.73 | 51.29 | 110.21 |
| II. *Gurco Pharma* | | | | | | | | | | | | |
| TETRACYCLINE 250 mg . . | 100 | 18.16 | 8.86 | 27.02 | 4.05 | .. | 31.07 | 4.66 | 8.93 | .. | 44.66 | 75.00 |
| III. *Gujarat Pharmaceutical* | | | | | | | | | | | | |
| BIOCYCLINE 250 mg . . . | 100 | 17.73 | 34.34 | 52.07 | 7.81 | 0.49 | 60.37 | 9.06 | 17.36 | 4.88 | 91.67 | 92.00 |
| IV. *Hoechst* | | | | | | | | | | | | |
| HOSTACYCLINE 250 mg . . | 100 | 20.08 | 14.69 | 34.77 | 5.22 | 0.58 | 40.57 | 6.09 | 11.67 | 3.28 | 61.61 | 106.38 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V *Pfizer* | | | | | | | | | | | | |
| (i) TETRACYN 250 mg (Tetracycl ne) | 4×100 | 81 41 | 45 65 | 130 06 | 19 31 | | 140 37 | 22 44 | 43 00 | 12 09 | 227 10 | 115 13 |
| (ii) TERRAMYCIN 250 mg (Oxyte racycline) | 4×100 | 67 46 | 51 82 | 119 28 | 17 89 | | 137 17 | 20 58 | 39 44 | 11 03 | 208 28 | 115 13 |
| VI *Khandelwal Labs* | | | | | | | | | | | | |
| TETRACYCLINE 250 mg . | 100 | 21 62 | 5 03 | 26 65 | 4 00 | 1 28 | 31 93 | 4 79 | J 18 | | 45 90 | 88 50 |
| VII *Cyanamid* | | | | | | | | | | | | |
| (i) ACHROMYCIN 250 mg (Tetracycl ne) . | 4 | 0 79 | 0 43 | 1 28 | 0 19 | 0 14 | 1 61 | 0 24 | 0 46 | 0 13 | 2 44 | 4 82 |
| (ii) AUREOMYCIN 250 mg (Chlortetracycline) . | 4 | 0 78 | 0 48 | 1 26 | 0 19 | 0 14 | 1 59 | 0 24 | 0 46 | 0 13 | 2 42 | 4 82 |
| (iii) LEDERMYCIN 150 mg (Demethyltetracycline) . . | 4 | 1 43 | 0 50 | 1 93 | 0 29 | 0 15 | 2.37 | 0 36 | 0 68 | 0 19 | 3 60 | 5 24 |
| VIII *Merck Sharp* | | | | | | | | | | | | |
| TRYCIN 250 mg . . . . | 4 | 0 75 | 0 57 | 1 32 | 0 20 | | 1 57 | 0 23 | 0 44 | 0 12 | 2 31 | 4 61 |
| IX *Alemb c Chem cal* | | | | | | | | | | | | |
| ALCYCLIN 250 mg . . . | 4×4 | 2 85 | 2 05 | 4 90 | 0 74 | 0 10 | 5 74 | 0 86 | 1 63 | 0 46 | 8 71 | 17 81 |
| B INJECTION | | | | | | | | | | | | |
| *Cyanamid* | | | | | | | | | | | | |
| ACHROMYCIN | | | | | | | | | | | | |
| INTRAVENOUS 250 mg . . | Each | 0 25 | 0 81 | 1 06 | 0 16 | 0 22 | 1 44 | 0 22 | 0 42 | 0 12 | 2 20 | 7 13 |

*18 Streptomycin Sulphate*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INJECTIONS | | | | | | | | | | | | |
| I *Hindus an Ant biotics* | | | | | | | | | | | | |
| STREPTOMYCIN SULPHATE | [illegible] | 0 34 | 0 02 | 0 56 | 0 03 | | 0 64 | 0 10 | 0 18 | | 0 92 | 0 71 |

### TABLE 29.1—*Concld.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| II. *Sarabhai* | | | | | | | | | | | | |
| AMBISTRYN—'S' 1.0 gr. | 10 vials (Box) | 3.64 | 1.24 | 4.88 | 0.73 | 0.06 | 5.67 | 0.85 | 1.63 | 0.15 | 8.30 | 7.60 |
| III. *Glaxo Labs.* | | | | | | | | | | | | |
| COMYCIN Inj. 5.2 gr. | 5 vials | 1.71 | 1.02 | 2.73 | 0.41 | .. | 3.14 | 0.47 | 0.90 | 0.08 | 4.59 | 6.60 |
| 19. *Streptomycin with Penicillin* | | | | | | | | | | | | |
| INJECTIONS | | | | | | | | | | | | |
| I. *Pfizer* | | | | | | | | | | | | |
| (i) *Dupenmycin* | | | | | | | | | | | | |
| SOD. PEN 5 lacs STREPTOMYCIN ½gr. | 100 vials | 34.01 | 28.51 | 62.52 | 9.38 | .. | 71.90 | 10.79 | 20.67 | 1.94 | 105.30 | 84.75 |
| (ii) *Combiotic* SOD. PEN. 1 lac PROC. PEN. 3 lacs STREPTOMYCIN ½gr. | 100 vials | 29.91 | 26.52 | 56.43 | 8.46 | .. | 64.89 | 9.73 | 18.65 | 1.75 | 95.02 | 77.00 |
| II. *Sarabhai Chemicals* | | | | | | | | | | | | |
| (i) *Dycrysticin*—'S'—800 | | | | | | | | | | | | |
| SOD. PEN. 1 lac PROC. PEN. 3 lacs STREPTOMYCIN ½gr. | 10 vials | 3.88 | 2.32 | 6.20 | 0.93 | 0.06 | 7.19 | 1.08 | 2.07 | 0.19 | 10.53 | 9.39 |
| (ii) *Penmyn Fortis* | | | | | | | | | | | | |
| SOD. PEN. 5 lacs STREPTOMYCIN ½ gr. | 10 vials (Box) | 3.13 | 2.06 | 5.19 | 0.78 | 0.06 | 6.03 | 0.90 | 1.73 | 0.16 | [illegible] | [illegible] |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| III *Glaxo Labs* | | | | | | | | | | | | |
| *Seclomycetin* | | | | | | | | | | | | |
| SOD PEN 1 lac . PROC PEN 3 lacs STREPTOMYCIN ½gr. | 5 vials | 1.56 | 1 07 | 2 63 | 0 39 | | 3 02 | 0 45 | 0 87 | 0 08 | 4 42 | 3 97 |
| IV *Hindustan Antibiotics* | | | | | | | | | | | | |
| STREPTOMYCIN | | | | | | | | | | | | |
| SOD PEN 1 lac . PROC PEN 3 lacs STREPTOMYCIN ½ gr. . | 1 vial | 0 56 | 0 03 | 0 59 | 0 09 | | 0 68 | 0 10 | 0 20 | | 0 98 | 0 74 |
| 20 *Streptomycin & chloramphenicol* | | | | | | | | | | | | |
| CAPSULES | | | | | | | | | | | | |
| I *Boehringer-Knoll* | | | | | | | | | | | | |
| CHLORAMPHYCIN 'S' 250 mg . | 100 | 12 27 | 2 38 | 14 65 | 2 20 | | 16 85 | 2 53 | 4 85 | 1 36 | 25 50 | 47 21 |
| II *Dey's Medical* | | | | | | | | | | | | |
| (i) ENTEROSTREP 250 mg . | 100 | 12 14 | 0 62 | 12 76 | 1 91 | 0 43 | 15 10 | 2 27 | 4 34 | 1 22 | 22 93 | 27 80 |
| III *Parke Davis* | | | | | | | | | | | | |
| (i) CHLOROSTREP KAPSEALS 250 mg | 12's | 1 39 | 0 57 | 1 96 | 0 29 | 0 07 | 2 32 | 0 35 | 0 67 | 0 19 | 3 53 | 7 92 |
| IV *Gasco Pharma* | | | | | | | | | | | | |
| (i) CHLOROSTREP 250 mg. . | 1000 | 108 38 | 44 82 | 153 20 | 22 98 | | 176 18 | 26 43 | 50 65 | 14 25 | 267 51 | 187 50 |
| 21 *Chloramphenicol & Tetracycline* | | | | | | | | | | | | |
| I *Dey's Medical* | | | | | | | | | | | | |
| ENTEROCYLINE 250 mg . . | 100 | 17 49 | 0 62 | 18 11 | 2 72 | 0 73 | 21 56 | 3 23 | 6 20 | 1 74 | 32 73 | 27 80 |

29.8. The *formulations* costed by us fall into the following forms of packs or applications :

(1) Containers

(2) Capsules

(3) Ampoules

(4) Vials

(5) Granules in containers.

Tablets are either packed in bottles or in strips of aluminium foil or cellophane. Capsules are either in strips or in bottles. Ampoules and vials are individual items of packings which are kept in specified numbers in cardboard boxes. Granules are packed in containers of different sizes. It is not possible to work out separately the cost of each packet and we therefore suggest the following principles for working out the cost of individual items or of numbers smaller than the pack for which the price had been shown.

29.9. Where tablets are packed in strips, the retail price of numbers smaller than those indicated in the table should be arithmetically proportionate. If the tablets are packed in bottles and the bottle is opened in order to dispense a smaller number an additional 5% over the retail price per tablet may be allowed to the retailers.

*Capsules.*—The same principles may be observed as in the case of tablets.

*Vials and ampoules.*—The cost may be reckoned in terms of individual ampoules or vials irrespective of the packaging in which it is contained by dividing the cost of the pack by the number of items contained.

*Dry powder for granules.*—These are not sold loose and the price of packings small or big—should be directly proportionate to the price which we have indicated.

29.10. As a result of the examination of the figures in Table 29.1 we have arrived at fair prices which are the lowest for the same product, *provided the formulation is being manufactured* by a reputable firm. The following Tables 29.2 and 29.3 show the fair retail price so computed of the various items costed by our Cost Accounts Officers.

TABLE 29.2

*Retail prices recommended for single drug formulations*

| Sl No | Formulations of | Application | dosage | Pack | Retail price recommended (exclusive of excise duty) |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| | | | | | Rs |
| 1 | Vitamin A | Vitamin A Inj | 1 lac i u /ml | 6×1ml | 2 13 |
| | | Vitamin A Tabs | 50,000 i u | 200(strip) | 18 93 |
| 2 | Vitamin B12 | Cyanocobalamin Inj | 500mcg/ml | 5ml | 1 37 |
| | | | | 10ml | 2 52 |
| | | Hydroxycobalamin Inj | 500mcg ml | 5ml | 1 51 |
| 3 | Vitamin C | Ascorbic Acid Tabs | 100mg | 1000 Tabs | 17 00 |
| | | Ascrobic Acid Inj | 100mg | 25×1ml | 5 36 |
| | | | | 50×2ml | 12 78 |
| 4 | Sulphadiazine | Sulphadiazine Tabs | 500mg | 500 Tabs | 30 91 |

TABLE 29.2—*Contd.*

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| | | | | | Rs. |
| 5 | Penicillin . . . . . | Potassium Penicillin 'G' Inj. | 10 lacs | 1 vial | 1·04 |
| | | Sodium Penicillin 'G' Inj. | 5 lacs | 5 vials | 3·34 |
| | | | 10 lacs | 5 vials | 5·08 |
| | | Procaine Penicillin G Inj. | 15 lacs | 1 vial | 1·45 |
| | | Penicillin G Procaine Fortified with Penicillin G Inj. | Sod. 1 lac+Proc. 3 lacs | 1 vial | 0·60 |
| | | | Sod. 5lacs+Proc. 15 lacs | 1 vial | 1·71 |
| | | Pencicillin Tabs. | 65 mg | 12 | 1·74 |
| 6 | Streptomycin . . . . . | Streptomycin Sulphate Inj. | 1·0 gr } | 10 vials } | 8·15 } |
| | | | 2·0 gr } | 5 vials } | 4·59 } |
| 7 | Chloramphenicol . . . | Chloramphenicol Caps | 250 mg | 100 | 21·01 |
| 8 | Tetracycline . . . . | Tetracycline Caps. | 250 mg | 100 | 48·56 |
| | | | | 4 | 2·19 |
| | | Oxytetracycline Caps | 150 mg | 400 | 197·19 |
| | | Chlortetracycline | 250 mg | 4 | 2·42 |
| | | Demethyl tetracycline Caps | 150 mg | 4 | 3·41 |

| | | | | | |
|---|---|---|---|---|---|
| 9 | Amodiaquin | Amodiaquin Hydrochloride Tabs | 0 2 gr | 250 Tabs | 15·41 |
| 10 | Chloroquin | Chloroquin Phosphate Tabs | 250 mg | 1000 Tabs | 113·40 |
| 11 | Iodo-chlor hydroxy-quinoline | Iodo-chlor hydroxy-quinoline Tabs | 250 mg | 500 Tabs | 13 12 |
| | | | | 1000 Tabs | 24·97 |
| | | Di Iodo-hydroxy quinoline Tabs | 210 mg | 1000 Tabs | 19 63 |
| 12 | Chlorpropamide . . | Chlorpropamide Tabs | 250 mg | 100 Tabs | 7·22 |
| 13 | Tolbutamide . . | Tolbutamide Tabs | 500 mg | 1000 Tabs | 64·09 |
| 14 | Insulin . | Insulin Inj | 40 u/ml | 10 ml | 4 67 |
| | | Insulin Zinc Suspension Inj | 40 u/ml | 10 ml | 6 04 |
| | | Insulin Protamin Zinc Inj | 40 u/ml | 10 ml | 5 09 |
| | | Isophane Insulin Inj | 40 u/ml | 10 ml | 5 08 |
| 15 | I.N H . . . | I N H Tabs | 100 mg | 1000 Tabs | 20 59 |
| 16 | P A S . . . . . | Sodium P A S Granules | 65% | 1000 gr | 46 73 |
| | | | 80% | 1000 gr | 55 21 |
| | | PAS Acid Granules | 70% | 100 gr | 7 35 |
| 17 | Tatanus Anti-toxin . . | Tatanus Anti-toxin Inj | 1500 i u | 1 ml | 1 14 |
| | | | 10000 i u | 1 ml | 7 20 |
| 18 | Prednisolone . . . | Prednisolone Tabs | 5 mg | 100 (strip) | 11 73 |

TABLE 29.3

*Retail prices recommended for multiple drug formulations*

| Sl. No. | Combination of drugs | Name of formulation | Dosage | Pack | Retail price recommended inclusive of excise |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| | | | | | Rs. |
| I. | Combination of different forms of Penicillin (Injections) | (i) PPF-4 Injection (of Pfizer) | 4 lacs/vial | 100 vials | 65·64 |
| | | (ii) PPF-20 Injection (of Pfizer) | 20 lacs/vial | 100 vials | 185·72 |
| | | (iii) CRYS-4 Injection (of Sarabhai) | Procaine 3 lacs, Sodium 1 lac | Each vial | 0·60 |
| II. | Combination of different forms of Streptomycin (Injection) | Comycin Injection (of Glaxo) | 2 gr | 5 vials | 4·59 |
| III. | Injection of Penicillin and Streptomycin | | | | |
| | (i) Streptomycin ½ gm. Sodium Penicillin 5 lacs | (i) DUPENMYCIN (Pfizer) | | 100 vials | 105·30 |
| | | (ii) PENMYNFORTIS (Sarabhai) | | 10 vilas | 10·53 |

| | | | | | |
|---|---|---|---|---|---|
| | (ii) Streptomycin ½ gm Sodium Penicillin 5 lacs | (i) CAMBIOTIC (Pfizer) | | 5 vials | 4 42 |
| | | (ii) DICRYSTICIN-S (Sarabhai) | | 5 vials | 4 42 |
| | | (iii) SECLOMYCETIN (Glaxo) | | 5 vials | 4 42 |
| | | (iv) STREPTO PENICILLIN (Hindustan Antibiotics) | | 5 vials | 4 42 |
| IV | Capsules of Chloramphenicol and Streptomycin Sulphate | (i) Chloramphycin S (of Boehringer Knoll) | 250 mg | 100 Caps | 22 93 |
| | | (ii) Chlorostrep (of Gurco Pharma) | 250 mg | 100 Cap | 22 93 |
| | | (iii) Chlorostrep Kapseals (of Parke Davis) | 250 mg | 12 Caps | 3 53 |
| V | Capsules of Chloramphenicol and Tetracycline | Enterocycline (of Dey's Medical) | 250 mg | 100 Caps | 32 73 |
| VI | Injection of Tetracycline and Vitamin C | Achromycin Intravenous Lederle (Cyanamid) | 250 mg | Each | 2 20 |

## CHAPTER 30

## COSTS OF PRODUCTION IN SMALL-SCALE UNITS

30 1 One of the terms of reference is to examine the prices *at which basic drugs and formulations* could be manufactured by small scale manufacturers who did not come within the purview of the Industries (Development and Regulation) Act Of the units adopted by us for cost study, three manufacture basic drugs and four formulations As a result of certain re classifications made by the D G T D recently one more unit has been transferred from the large scale to the small scale sector The total number of units thus is 7 of which two manufacture both basic drugs and formulations and three only formulations The particulars of these units together with the basic drugs and formulations manufactured by them are given in Table 30 1

TABLE 30 1

*List of small scale units whose costs were examined*

| Sl, No | Name of the Unit | Basic drug manufactured | Single drug formulation manufactured with gentic name | Multiple drug formulation manufactured with brand name |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| 1 | Alliance Trading Corpn , Calcutta | Nil | 1 Iodochlorhydroxyquinolene | Combination of I N H Vit B12 |
| | | | 2 PAS | Calcium PAS |
| 2 | Cadilla Labs , Ahmedabad | Nil | 1 Vitamin B12<br>2 Vitamin B12(b)<br>3 Chloramphenicol | Combination of I N H and PAS |
| | | | 4 Sulphadiazine | |
| | | | 5 Vitamin C | |

TABLE 30.1—*Contd.*

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | 6 I.N.H.<br>7 PAS<br>8 Prednisolone<br>9 Di-iodo hydroxy-quinolone | |
| 3 | Gujarat Pharmaceutical & Chemical Works, Ahmedabad. | Nil | 1 Tetracycline<br>2 Tolbutamide<br>3 Chloramphenicol<br>4 Vit. B 12<br>5 Vit. B 12(L)<br>6 Vit. C<br>7 Chlorpropamide<br>8 Prednisolone<br>9 Chloroquin | Combination of I.N.H. and PAS |
| 4 | Gurco Pharma, Delhi. | Nil | 1 Chloramphenicol<br>2 Tolbutamide | Combination of chloramphenicol and dihydrostreptomycin sulphate |
| 5 | Khandelwal Labs., Bombay | Nil | 1 Tetracycline<br>2 Vit. B12<br>3 Sulphadiazine<br>4 Vit. C | Nil |
| 6 | Neogy Laboratories, Calcutta. | Iodo-chlor hydroxy-quinolone | Nil | Nil |
| 7 | Suneeta Labs., Indore | I.N.H. | Nil | Nil |

30.2. There are only two basic drugs which are being manufac-ured in the small scale sector *viz.*, INH ,and Iodo-chlor-hydroxy-uinoline. The comparative prices based on the estimates for hese are as follows :

**Iodo-chlor-hydroxy-quinoline**

In the small scale sector this drug is being manufactured only by Neogy Laboratories and Alliance Trading Corpn Of the large scale units cost of East India Pharmaceutical Works was examined and the comparative figures have been given in paragraph 28 12 The costs of both the small scale units are similar but that of the large scale unit is 50 per cent higher The main reason for the high cost of the large scale unit is the higher [illegible] y Labs [illegible] higher [illegible] Alliance Trading gains on material costs is made up by its higher conversion costs which are more than double that of Neogy but less than half that of East India

**I.N H.**

This drug is being manufactured by Suneeta Labs The costs of Suneeta Labs were examined along with those of two large scale units These costs have been shown in paragraph 28 16 and indicate that those of Suneeta Labs are less than half of that of Pfizer and about 58 per cent those of Biological Evans In the case of Suneeta Labs the materials cost is low and conversion cost is very much lower than that of the other two large scale units Conversion costs of Biological Evans and Pfizer are definitely excessive and what Suneeta can do for Rs 4 67 per kg is done by Pfizer for almost 8 times at Rs 39 62 and by Biological Evans at more than 5 times at Rs 27 42

30 3 Coming to formulations we find that the number of formulations made by the small scale units costed by us is fairly large The following table gives the costs of production of the various single drug formulations as between the large and small scale units

*Comparison of total factory costs and fair retail prices of single drug formulations manufactured by the Small Scale and the Large Scale Units*

| | | SMALL SCALE UNITS | | | | LARGE SCALE UNITS | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sl. No. | Name of Drug and Formulation | Name of the manufacturing unit (BRAND NAME) | Dosage/pack | Total factory cost Rs. | Fair retail price Rs. | Name of the manufacturing unit (BRAND NAME) | Dosage/pack | Total factory cost Rs. | Fair retail price Rs. |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1. | *Vitamin B12 Injections.* | (1) Cadila Labs. (COBALMIN) | 500 mcg.ml/5ml. | 1.04 | 1.77 | (1) Alembic Chemical (CY-COBAL) | 500 mcg/ml/5ml. | 1.02 | 1.68 |
| | | (2) Gurco Pharma | 500 mcg.ml/5ml. | 1.28 | 1.94 | (2) Bengal Immunity | 500 mcg/ml/5ml. | Not Costed. | |
| | | | | | | (3) Biological Evans. . | 500 mcg/ml/5ml. | 0.89 | 1.37 |
| | | | | | | (4) CIPLA (CIPLAMIN) | | Not Estimated. | |
| | | (3) Gujarat Pharmaceutical. | 500 mcg.ml/10ml. | 2.05 | 3.12 | (5) Dey's Medical (VITA-COUZE) | | 0.84 | 1.40 |
| | | | | | | (6) Glaxo Labs. (MAC-RABIN) | 500 mcg/ml/5ml. | 1.00 | 1.61 |
| | | (4) Khandalwal Labs. (CY-NOPLON) | 500 mcg.ml/10ml. | 1.65 | 2.66 | (7) Merck Sharp (REDI-SOL) | 500 mcg/ml/5ml. | 1.06 | 1.70 |
| | | | | | | (8) Sarabhai Chemicals (RUBRAMIN) | | Not Costed. | |
| | | | | | | (9) Martin & Harries . | | Not Costed. | |
| | | | | | | (10) Unichem Labs. . . | 500 mcg/ml/5ml. | 1.03 | 1.60 |
| | | | | | | (11) Zandu . . . . | 10ml. | 1.37 | 2.09 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (1) Cad la Labs | | | Not Costed | | | | | | |
| | | (2) Gurco Phrma | | | Do | | | | | | |
| | | (3) Gujarat Pharmaceut cal (COBIN II) | 500 mcg ml/5ml | | 1 93 | 3 14 | (1) CIPLA (CIPLAMIN II | | | Not Estimated | |
| | | | | | | | (2) Claxo Labs (MACRABIN II) | 500 mcg/ml/5ml | | 1 17 | 1 88 |
| | | | | | | | (3) Merck Sharp (REDISOL-II) | 500 mcg/ml/5mL | | 2 20 | 3 63 |
| | | | | | | | (4) Sarabhai Chemicals (RUBRAMIN II) | " | " | Not Costed | |
| | | | | | | | (5) Unichem Labs (UNIB-12 II) | 500 mcg/ml/5ml | | 0 99 | 1 59 |
| 2 | Vitamin C Tablets | (1) Cadila Labs | 100 mg | 1000 | 12 10 | 18 93 | (1) Alembic Chemical (LIVINAL) | 500 mg | 1000 | 12 22 | 19 63 |
| | | | | | | | (2) Deys Medical | 100 mg | 1000 | 10 99 | 17 00 |
| | | (2) Gurco Pharma | 100 mg | 1000 | 18 91 | 28 76 | (3) Glaxo Labs (CELIN) | 100 mg | 1000 | 11 39 | 18 30 |
| | | (3) Gujarat Pharmaceutical | 500 mg | 250 | 11 11 | 16 91 | (4) Martiny & Harris | | | Not Costed | |
| | | (4) Khandalwal Labs | 100 mg | 500 | 9 41 | 14 36 | (5) Roche Product (REDOXIN) | 500 mg | 10×10 | 8 15 | 13 10 |
| | | | | | | | (6) Sarabhai Chemical (ASCORBICIN) | 250 mg | 100 | 3 51 | 5 83 |
| | | | | | | | (7) Zandu | 100 mg | 1000 | 14 46 | 22 39 |
| 3 | Sulphadiazine Tablets | (1) Cadila Labs | 500 mg | 500 | 18 36 | 30 91 | (1) Boots | | | Not Costed | |
| | | (2) Khandalwal Labs | 500 mg | 500 | 20 10 | 33 86 | (2) Cyanamid | | | Do | |
| | | | | | | | (3) Deys Medical | 500 mg | 500 strip Box | 18 74 | 31 35 |
| 4 | Chloramphenicol Capsules | (1) Cadila Labs (CADINICETIN) | 250 mg | 12 | 2 39 | 4 17 | (4) May & Baker | 500 mg | 50×10 | 19 11 | 32 31 |
| | | | | | | | (1) Alembic Chemical (ALCOPHENICOL) | 250 mg | 12 | 1 93 | 3 43 |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| | | (2) Gurco Pharma (GURCOMYCETIN) | 250 mg. 100 | 18.63 | 32.52 | (2) Boehringer-knoll (CHLORAMPHYCIN) | 250 mg. 100 | 14.78 | 24.43 |
| | | (5) Gujarat Pharmaceutical (PHENICHLOR). | 250 mg. 125 | 22.27 | 38.88 | (3) CIPLA (CIPLAMYCETIN | .. | Not Estimated. | |
| | | | | | | (4) Dey's Medical (ENTEROMYCETIN). | 250 mg. 100 strips | 16.69 | 29.69 |
| | | | | | | (5) Parke-Davis (CHLOROMYCETIN). | .. | Not Estimated. | |
| | | | | | | (6) Pfizer (CHLORAMEX) | 250 mg. 100 | 12.71 | 22.19 |
| | | | | | | (7) Unichem Labs. . . | 250 mg. 100 | 16.78 | 28.81 |
| 5. | *Tetracycline Capsules.* | (1) Gurco Pharma | 250 mg. 100 | 27.02 | 44.66 | (1) Alembic Chemical (ALCYLINE). | 250 mg. 4×4 | 4.90 | 8.71 |
| | | (2) Gujarat Pharmaceutical (BIOCYCLINE). | 250 mg. 100 | 52.07 | 91·67 | (2) Cyanamid (ACHROMYCIN). | 250 mg. 4 | 1.28 | 2.44 |
| | | (3) Khandelwal Labs. | 250 mg. 100 | 26.65 | 45.90 | (3) Dey's Medical (SUBAMYCIN). | 250 mg. 100 (25×4 Box) | 28.57 | 51.29 |
| | | | | | | (4) Hindustan Antibiotics | .. | Not Costed. | |
| | | | | | | (5) Hoechst (HOSTACYCLINE). | 250 mg. 100 | 34.77 | 61.61 |
| | | | | | | (6) Merck Sharp (TRYCIN). | 250 mg. 4 | 1.32 | 2.31 |
| | | | | | | (7) Pfizer (TETRYCIN) . | 250 mg. 4×100 | 130.06 | 227.10 |
| | *Oxytetracycline Capsules.* | | | | | Pfizer . . . . | 4×100 | 119.28 | 203.28 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Chlortetracycline Capsuless* | | | | | | Cyanamid (AUREOMYCIN) | | 4 | 1 26 | 2 42 |
| | *Demethyl Chlortetracycline Capsules* | | | | | | Cyanamid (LEDERMYCIN). | 150 mg | × 4 | 1 93 | 3 60 |
| 6 | *CHLOROQUIN PHOSPHATE Tablets* | (1) Gujarat Pharmaceutical | 250 mg. | 1000 | 78 10 | 118 78 | (1) Bengal Immunity | 250 mg | 1000 | 72 33 | 113 40 |
| | | | | | | | (2) Zandu | 250 mg | 1000 | 73 25 | 111 80 |
| 7 | *Iodochlor hydroxy-quinoline Tablets.* | Alliance Trading (HALOGENOL) | 250 mg | 500 | 8 33 | 15 37 | (1) Alembic Chemical (ALCHLOQUIN) | 250 mg | 500 | 12 84 | 20 90 |
| | | | | | | | (2) Dey's Medical (DEQUINOL) | 250 mg | 500 (strips) | 9 54 | 15 03 |
| | | | | | | | (3) East India Pharmaceutical (ENTROHIONOL) | 250 mg | 500 (strips) | 15 19 | 25 04 |
| | | | | | | | (4) Martin & Harris | 250 mg | 1000 | 15 89 | 24 97 |
| | | | | | | | (5) Unichem Labs | 250 mg | 500 | 10 39 | 16 08 |
| | | | | | | | (6) *Zandu* | *250 mg* | 1000 | 17 98 | 27 75 |
| 8. | *Di iodo-hydroxy-quinoline Tablets* | Cadila Labs (DIOQUIN) | 210 mg. | 1000 | 12 91 | 20 00 | (1) Alembic Chemical (ALDOQUIN) | | | Not Costed | |
| | | | | | | | (2) Bengal Immunity (DINOQUIN) | | | Not Costed | |
| | | | | | | | (3) CIPLA (DIODOXYLIN) | | | Not Estimated | |
| | | | | | | | (4) May & Baker (EMBEQUIN) | | | Not Costed. | |
| | | | | | | | (5) Zandu (HISTOQUIN Comp ) | 210 mg | 1000 | 23 78 | 36 85 |

TABLE 30.2—(*cond.*)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 9. | *CHLORPROPAMIDE Tablets.* | Gujarat Pharmaceutical (CHLORINESE). | .. | Not Estimated | | (1) Bengal Chemical (DIABINOL). | .. | Not Costed. | |
| | | | | | | (2) Pfizer (DIABENESE) . 250 mg. | 100 | 4.75 | 7.63 |
| 10. | *Tolbutamide* | Gurco Pharma (GLUCOFREN) | .. | Not Estimated | | (1) Boehringer-Knoll (ARTOSIN). 500 mg. | 1000 | 42.14 | 67.70 |
| | | | | | | (2) Hoechst (RASTINON) 500 mg. | 1000 (pack of 100×10) | 73.83 | 120.76 |
| | | | | | | (3) Unichem (UNITOLBID). | .. | Not Costed. | |
| 11. | *I.N.H. Tablets* | (1) Cadila Labs. (CADIZIDE) 100 mg. | 1000 | 13.08 | 22.88 | (1) Alembic Chemical (ALZIDE). 100 mg. | 100 | 2.95 | 4.99 |
| | | (2) Gujarat Pharmaceutical. 100 mg. | 1000 | 18.25 | 30.34 | (2) Bengal Immunity | .. | Not Estimated. | |
| | | (3) Gurco Pharma. (GURCOZIDE). | Not Costed. | | | (3) Biological Evans. . 100 m.g | 1000 | 13.71 | 22.74 |
| | | | | | | (4) Dey's Medical . . 100 mg. | 1000 | 12.27 | 20.59 |
| | | | | | | (5) Glaxo Labs, (PELAZIDE). 100 mg. | 1000 | 13.06 | 21.99 |
| | | | | | | (6) Martin & Harris | .. | Not Costed. | |
| | | | | | | (7) Pfizer (ISONEX) . 100 mg. | 100 Box 100 | 201.31 | 339.04 |
| | | | | | | (8) Sarabhai Chemicals (NYDRAZIDE). 100 mg. | 1000 | 17.23 | 29.53 |
| | | | | | | (9) Unichem (UNIZIDE) | .. | Not Costed. | |
| | | | | | | (10) Zandu (ISOZIDE) . 100 mg. | 1000 | 15.51 | 26.57 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | *P A S Granules* | (1) Alliance Trading 100% | 500 gr. | | 17 63 | 29 51 | (1) Biological Evans . | 65%—1000 gr | | 28 02 | 46 73 |
| | | | | | | | | 80%—1000 gr | | 33 16 | 55 21 |
| | | (2) Gurco Pharma 65% | 500 gr. | | 17 63 | 29 14 | (2) Hoechst (AMINOX) | 48 70—250 gr | | 8 93 | 15 17 |
| | | | | | | | (3) Pfizer (PAS Acid) | 70% Tin of 100 gr | | 4 44 | 7 35 |
| | *Tablets* . | (1) Cadila Labs | | | Not Costed | | | | | | |
| | | (2) Gurco Pharma. | | | Not Costed | | (1) Martin & Harris . | .. | | Not Costed | |
| | | | | | | | (2) Pfizer (Sod PAS) | 80% | 100 gr | 4 07 | 6.73 |
| 13 | *Prednisolone Tablets* | (1) Cadila Labs . | 5 mg | 500 | 33 07 | 57 80 | (1) Alembic Chemical (PRECIN) | 5 mg | 10 | 1 00 | 1 75 |
| | | (2) Gujarat Pharmaceutical | 5 mg. | 100 (strips) | 12 97 | 21 68 | (2) Boots . | . | | Not Costed | |
| | | (3) Gurco Pharma | .. | | Not Costed | | (3) Dey's Medical | 5 mg | 100 (strips) | 6 93 | 11 73 |
| | | | | | | | (4) Glaxo Labs (PELATA-BECORLIN) | 5 mg | 100 | 8 53 | 14 79 |
| | | | | | | | (5) Hoechst (HOSTACORTIN H) | 5 mg | 10×10 (strips) | 8 55 | 15 10 |
| | | | | | | | (6) Merck Sharp . | | | Not Estimated | |
| | | | | | | | (7) Pfizer (DELTACORTRILL) | 5 mg | 100 | 7 40 | 12 93 |
| | | | | | | | (8) Unichem (UNALGENIC) | 5 mg | 100 | 7 78 | 13 87 |
| | | | | | | | (9) Wyeth Labs (WYSOLONE) | 5 mg | 100 | 8 54 | 15 04 |
| | | | | | | | (10) Zandu . . . | 5 mg | 1000 | 71 49 | 128 61 |

30.4. The above figures would show that for the costed units the range of prices as determined by us is similar in the case of both sectors of the industry. Small Scale units do not therefore afford any particular economy in comparison with those in the organised sector.

30.5. Comparison is not possible in respect of multiple drug formulations as the proportions of the different basic drugs in such formulations vary from manufacturer to manufacturer.

## CHAPTER 31

## RETURN ON CAPITAL

31 1 Manufacture of drugs is not a uniform activity but differentiated as between production of basic drugs and the manufacture of formulations The analysis conducted by us in chapter 27 clearly shows that the capital as well as cost structure differs in either of the two cases In the case of activity related to the manufacture of basic drugs alone, heavy capital investment is needed and return can therefore be related to the capital employed On the other hand, in the case of formulations, the industry and consequently individual units are not capital intensive and the proprotion of capital employed to the sales turnover is very much smaller than in the other case It would be quite safe to adopt the capital employed as basis for the formulation of the rate of return in the case of basic drug manufacture The profit constitutes the difference between the value of sales and the cost of sales These have in their turn to be related to the capital employed in order to provide a fair rate of return to the shareholder as well as to provide funds for the discharge of other liabilities imposed on the company such as payment of bonus to workers and taxes etc In the case of formulating activity the rate of profit cannot be so applied to the employed capital since the quantum of net assets is small and the working capital may be high The determination of the working capital in the case of formulating activity would be difficult and even if it is done it will be more or less tantamount to the cost of sales We have therefore in the case of formulations adopted the cost of sales as the basis for the determination of the return Where both basic drugs manufacturing activity as well as that of formulation is being conducted by the same unit, capital employed for basic drugs has been isolated from the rest of the capital employed and the possibility of allowing return twice over on the same activity has been eliminated

31 2 The industry has suggested that for both activities turnover and not capital employed should be the criterion for the determination of return For the reasons mentioned above it is not possible to agree with this suggestion

31 3 Capital employed consists of net assets and working capital It has been proposed by the industry that the concept

of capital employed as balance sheet total minus accumulated losses is not appropriate and that the market value of the industry's assets should be substituted for the value shown in the balance sheet. This means the revision of the assets from time to time in order to conform to the current market values of the plant and machinery. This plea has been made before us in the past also on the ground that owing to rise in prices the value of the fixed assets also increases and that these should be revalued. Fixed assets of a company develop as a result of certain investments made during different periods of time. These items undergo depreciation as time passes and necessary deductions for depreciation value are made. If the principle for revaluation were to be adopted it would be necessary to determine the value of each item purchased at widely separate intervals and then verify the values so determined with the help of certain definite standards. This cannot for obvious reasons be done. It is therefore not possible to make any revaluation of the fixed assets. Such revaluations are also not made by any industry nor are these countenanced by the various regulatory provisions or Income Tax Law. Another difficulty that would arise is that the paid up capital which is the source from which the block was setup will also need to be correspondingly increased in order to get revaluation of the block. This for obvious reasons cannot be done since the value of money may have fallen in terms of commodities but cannot be considered to be so in terms of money itself. Any attempt at revaluation of assets would lead to intractable problems and complexities. It has also been argued that the basis for working out return on capital should be what is called the total assets and not the net assets. This would mean the inclusion of reserves for depreciation in the block. Since the element for depreciation has been added as an item of cost it cannot be accounted twice over as an item on which return is to be allowed even if it has not been used. Where the amount allowed as depreciation has already been utilised for increasing assets, the company in addition to the advantage of its being reckoned as an item of cost also gets return on the amount or such amount as may have been added to the assets for the purpose of return. Another suggestion made is that research and development expenditure should be capitalised. As we have discussed already the expenditure on this account is nominal and it has invariably been included as an item of cost. If such expenditure were to be excluded from costs and capitalised, the only result would be the deferment of write off and allowing simultaneously a certain quantum of returnon the element of this expenditure so included in the net assets. The expenditure being small, it has, wherever incurred, been shown

as an item of cost and therefore the question of its capitalisation does not arise.

31 4 with regard to working capital the industry has argued that current liability should not be deducted from current assets Working capital has been defined as excess of current and liquid assets over current liability required in business having regard to reasonable provision for contingencies so as to enable it to conduct its operations normally and free from financial embarrassment at the same time avoiding losses consequent upon incurring commitments beyond its capacity in the ordinary course of events It may be possible to carry on business with small margins in cases where goods are sold for cash While raw materials for manufacture of such goods are bought on credit or where the sale credit period is shorter than purchase credit period many businesses particularly small ones work from hand to mouth without reserve strength required to meet special circumstances In many business companies particularly when these are thriving, the tendency is to run the business on its own reserves rather than to rely on borrowings Financial institutions take into consideration the net worth of the business as a guiding factor for the limits of accommodation offered On the other hand a company using a large percentage of borrowing may have to take a larger outlay on the servicing of the loans The additional return to which it would thu [illegible]
risk taken [illegible]
business [illegible]
and higher earning would compensate them for the risks taken Again the working capital is devised on principles of an average for a number of units Any disadvantage accruing to a unit which has a low borrowing rate would be compensated by the increase resulting from the adoption of the principle of averages On the other hand, units which have to put much greater reliance on such borrowings will have to find ways and means to reduce them in order that their overall profitability may not partly be eaten into by the interest on loans

31 5 The net result is that capital employed will be constituted of net fixed assets plus working capital on the assets side and the paid up capital, reserves, borrowings minus current liabilities on the liabilities side The industry has through its Associations made a few points with regard to the demand of a high rate of return It has been mentioned repeatedly that it is a high risk industry There have no doubt been fluctuations in the destinies of a number of firms abroad in relation to whether or not their innovational activity has kept pace with demand of

the times. These fluctuations have resulted mostly in consequence of international competition. The industry in India is not faced with any such problems. There has been almost no innovational activity in this country; our contribution over the last two decades is that of one drug only out of a total of 719 drugs invented and even this drug does not have a very large market. Of the 34 units costed by us and 11 more units of which we have had occasion to examine balance-sheets we found that losses had been shown only in the case of one small-scale unit and even this unit did not maintain its accounts properly ; all other units have prospered with varying degrees of profitability. Only when a high level of production and substantial exports are established is it necessary for a unit to keep on its toes to be able to introduce with a certain degree of regularity new drugs in order that it may not lose its position. We do not find any special element of risk involved in so far as the drug industry is concerned. On the other hand, from the results of the analysis of the balance-sheets we can safely say that this is quite a safe industry for investments. No higher rate of return over and above the generality of industries in India can on this count be admitted in the case of the pharmaceutical industry.

31.6. A factor which has been cited as having distorted the earning pattern of the industry is the application of indiscriminate price freeze in 1963 and the continuance of uneconomic price control since 1966. It has been argued that the pattern of profitability in these years should not be the basis of any conclusions. While not going into the question of the effect of price freeze on the profitability we may state that our determination of the rate of return is not based on the experience of the industry in the past few years but is in consideration of the requirement needed for the discharge of the liabilities of the companies with regard to their duties towards the Government, shareholders and labour. One of the units has argued for a higher rate of return for the foreign investor on account of the investment made at pre-devaluation rates. It says that in the absence of adequate return there would be no enthusiasm to invest in the drug industry and its growth will be impeded ; the annual consumption of drugs is less than Rs. 4 per head while it is much more in other countries and even in developing countries like Spain the *per capita* annual expenditure is Rs. 38, in the case of France it is more than 24 times that of India ; any slight increase in the price of drugs would not therefore constitute any serious or additional burden on the population ; but if the incentive to invest in the drug industry is impaired its growth will be impeded and once the industry is

damaged it will take the Government and the community for more effort to revive it than the slight initial increase if any that may be occasioned now This approach presumes that even though there is a case for granting increase in price it is being denied for fear of increasing the burden on the community This is not so If increase were warranted we would certainly advocate this, irrespective of the additional burden on the consumer As to differential treatment to foreign investors we find it difficult to agree with this line of argument No special treatment is proposed to be given to units which have a foreign base We are satisfied that the return which we have allowed should attract all categories of investors, foreign or Indian As we have already mentioned the opportunity to set up an industry in a foreign country and to earn profits is in itself a valuable advantage which is available to the foreign investor in addition to the normal return We find from the Pharmaceutical Industry source book of U K that the return is 15 per cent in U K for the pharmaceutical industry as against 14 per cent for other industries The calculations have been made on the basis of total capital employed less current liabilities and the percentage with profits (gross of depreciation and taxes) According to the U S A Pharmaceutical Year Book the return was 18 per cent as average for the years 1957 to 1966 of net worth and 10 3 per cent as percentage of sales

31 7 Employed capital as we have adopted it is only a base for refernece since the quantum of profits needed has been determined on the basis of the amounts due to the industry for the purposes of meeting its liabilities and commitments Differing interpreta[illegible] as the capital emplo- [illegible] The dividends earned [illegible] 1333 joint stock companies in India for the years 1962 63 to 1965 66 varied between 10 1 to 10 7 per cent On the other hand under the provision of the Bonus Act a minimum dividend of 8 5 per cent has been assumed Adding to the latter the amounts needed for the payment of the minimum compulsory bonus the amounts required for being set aside as reserves and amount of corporation tax we have made an analysis of 12 units in so far as their manufacturing activity of basic drugs is concerned The figures at which we have thus arrived when related to the employed capital as worked out by us come to 13 3 to 20 3 per cent of the employed capital This is the minimum that would be needed by the units for which this examination has been made in order to pay a dividend of 8 5 per cent as against the higher dividends earned by

the shareholders of the pharmaceutical companies. Table 31.1 gives the details of these figures.

31.8. Considering that the drug industry is oriented to humanitarian services it should not hanker after the high profits and we have assumed a low rate of dividend and consider that the stability of the companies as well as higher margins earned on their side activities would be conducive to the attraction of the requisite capital. We have therefore arrived at the figure of 15 per cent on the employed capital as fair return for the industry in respect of its manufacture of basic drugs.

31.9. In the case of formulations calculations have been made on similar lines and are shown for certain selected units in Table 31.2. It is not possible to relate the quantum of profit that is needed by the units which made formulations only or composite units for the formulating activity only, to the employed capital of formulations alone. For, the manufacture of formulations is an activity which does not require heavy deployment of plant and machinery. In a number of cases formulations are manufactured by small units in rented buildings or even in laboratories. In such cases the investments are meagre and not commensurate with the volume of work done with manual labour and the profit needed to run the concern would be unrealistic if related to the employed capital. The peculiar features which exist in the market also warrant consideration for providing a margin of return to cover different scales of discounts, namely to the trade, wholesalers and retailers. The margin should therefore be such as to absorb these elements providing a fair profit for the formulator either in the small scale or large scale sector of the industry. Of the units selected by us for costing there are ten units with exclusive formulating activity. Excluding one which showed a loss of 6.1 per cent and another for which analysis of Balance Sheet could not be done, the rest showed profits ranging from 4.8 per cent to 19.6 per cent on the total cost of sales. Relating the amounts needed by formulators to meet their commitments and liabilities to the cost of the drugs manufactured, we find that the range is from 13.9 to 15.7 per cent and we consider therefore that a mark up of 15 per cent would be reasonable. We have therefore added the amount of 15 per cent on the cost of the drugs as the return on formulations.

TABLE 31 1

*Computation of required surplus for basic drug manufacturers*

| Sl No of units | Required surplus Rs /lakhs | Capital employed Rs /lakhs | Required surplus expressed as percentage of capital employed |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1 | 3 85 | 26 03 | 14 8 |
| 2 | 23 69 | 178 30 | 13 3 |
| 3 | 38 75 | 271 23 | 14 3 |
| 4 | 0 42 | 2 03 | 20 7 |
| 5 | 2 68 | 19 35 | 13 9 |
| 6 | 11 97 | 73 00 | 16 4 |
| 7 | 55 03 | 354 80 | 15 5 |
| 8 | 18 79 | 114 16 | 16 5 |
| 9 | 176 93 | 1,065 99 | 16 6 |
| 10 | 47 08 | 245 09 | 19 2 |
| 11 | 37 94 | 192 32 | 19 7 |
| 12 | 0 50 | 2 46 | 20 3 |

TABLE 31 2

*Computation of required surplus as percentage of cost of sales for formulators*

| Sl No of units | Required surplus Rs /lakhs | Cost of sales Rs /lakhs | Required surplus as percentage of cost of sales |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| (1) | 5 91 | 37 66 | 15 7 |
| (2) | 10 76 | 77 20 | 13 9 |
| (3) | 3 78 | 24 55 | 15 4 |

## CHAPTER 32

# SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Our conclusions and recommendations are summarised below :—

(1) Though the actual terms of refernece relate to price reduction we have interpreted the reference in terms of the provisions of Section 12(d) of the Tariff Commission Act as an inquiry on prices of drugs.

(Paragraph 1.2)

(2) The scope of the inquiry covers (1) the 18 specified drugs sold in bulk ; (2) single drug formulations of the specified drugs each containing any one of the specified drugs as its major therapeutic ingredient ; and (3) multiple drug formulations of the specified drugs each containing to two or more of the specified drugs only without addition of drugs outside the list.

(Paragraph 2.2)

(3) The difficulties mentioned by the Director, Drugs Control Administration, Maharashtra in the implementation of the Drugs Prices (Display and Control) Order, 1966 may be considered and suitable modifications introduced.

(Paragraphs 4.2.9 and 4.2.10)

(4) There ought to be uniformity of standards of administration, testing, approval and other matters regulating manufacture of drugs. Policies may be devised and implemented in such a way that the present disparity in these standards is removed.

(Paragraph 4.3.5)

(5) Steps may be taken both by Government and by the drugs and pharmaceuticals industry to arrive at uniform classifications and sub-classifications of the basic drugs. Information may be collected and published for these on uniform lines.

(Paragraph 6.1.4)

(6) Steps may be taken to ensure that State Drugs Controllers maintain records of the licences issued by them to manufacturers of drugs and these records should be readily available. It is also desirable that the list of such licences is published periodically on a Central basis for the whole country and it should contain the names of the units with location, year of grant of licence, drugs and formulations specified in the licence, installed capacity and annual production in terms of the quantity of formulations and drugs to be manufactured or suitable aggregates of the same.

(Paragraph 6 3 3)

(7) Even though there are more than 2 000 small scale units and each one functions under a licence, very little information is available in respect of their activities and contribution to the pharmaceutical industry. The State Drugs Controllers should collect information annually in respect of the small scale units on the lines indicated in paragraph 6 3 3.

(Paragraph 6 3 3)

(8) There are cases where the licensed capacities of units for manufacture of basic drugs are substantially higher than the capacities installed. While it is desirable to recognise the higher installed capacities where these have been established, it would be equally advisable to reduce licensed capacities where these have not been set up within the period stipulated for installation. This would be conducive to more healthy growth of the industry and would lead to more scientific assessment of the requirements of the industry particularly in regard to foreign exchange and the size of other supporting industries producing raw materials.

(Paragraph 7 1 6)

(9) In the drugs and pharmaceuticals industry as in many other industries, on the one hand quite a number of licences issued for installation and expansion have remained dormant, on the other, there are numerous cases where installed capacity has exceeded the licensed capacity and been permitted to so exceed with *ex post facto* approval in selected instances on the ground of increased production achieved and refusal in others. There is no uniform or firm policy at work in this regard. It would be opportune to make a thorough review of the working of the Industries (Development and Regulation) Act and the Rules and actual procedures adopted in granting the licences and approval or disapproval of changes in capacity from time to time.

(Paragraph 7 1 7)

(10) Suitable additions may be made to the Drugs and Cosmetics Rules for specifying the capacity of small scale units licensed or approved to manufacture basic drugs.

(Paragraph 7.1.8)

(11) The under-utilisation of capacity for the specified basic drugs does not reveal a healthy picture of the drugs industry. Extensive replanning is needed for achieving greater utilisation of capacities especially in the case of the units manufacturing the specified basic drugs.

(Paragraph 8.2.2)

(12) Steps need to be taken to ensure that the units licensed to manufacture basic drugs set up capacity within a stipulated period of time or the licence should be revoked. In the case of drugs which have to be imported owing to lack of adequate capacity, this principle should be enforced with greater vigour.

(Paragraph 9.4)

(13) Our estimates of consumption of the specified basic drugs for the years 1968, 1969 and 1970 are given in Table 11.4.

(Paragraph 11.5)

(14) For raw materials of which indigenous supplies are available, imports need to be discouraged, even if the cost of the imported material is lower than that of the indigenous one. Where the indigenous supply needs to be supplemented by partial imports, it would be desirable to ensure that some system of pooling is attempted so that the raw materials are available at the same rates to the different manufacturers and there is no unfair advantage to a particular manufacturer which is not available to the rest.

(Paragraph 12.1.5)

(15) It would be desirable to permit imports at concessional rates of customs duty in respect of specific raw materials and intermediates which are needed by the drugs and pharmaceuticals industry, until such time as indigenous capacities for such raw materials and intermediates are set up.

(Paragraph 12.1.5)

(16) A stage has now been reached when slaughter houses have to be used not only for providing meat as an item of food but also as sources of some of the important medicinal and biological raw materials. The State must therefore take in hand the

regulation of large slaughter houses in such a way that the bye-products are not wasted but can be retrieved and utilised for medicinal and therapeutic purposes

(Paragraph 12 2 8)

(17) The quality of materials like glass containers rubber stoppers and aluminium strips and the lack of uniformity in size need the close attention not only of the industry but also of Government and its various agencies which control and regulate production and quality in order to ensure that the indigenous industry is not found wanting even in those spheres where self sufficiency is claimed but has not been achieved owing to lack of quality and conformity to specifications Attention needs also to be paid very closely to the arrangements for raw materials and intermediates not produced by making their supply certain Schedules need to be drawn up for this purpose in order to ensure that with a certain degree of vigilance of programme planning uncertainties are eliminated

(Paragraph 12 2 8)

(18) It would be desirable to emulate the example of many advanced countries of Europe, particularly Denmark where no drugs in the form of capsules are marketed and drugs are sold in the form of tablets so that the use of imported Gelatine may be eliminated and foreign exchange saved

(Paragraph 12 2 8)

(19) The existing legislation in our country recognises both generic names as well as brand names but it is incumbent on the manufacturer to enter the generic name also prominently on the container It would be desirable to revise generic names and introduce an abbreviated nomenclature for the purpose of drug manufacture with short, distinctive and easily spelt out names

(Paragraph 13 25)

(20) Wherever preparations are prescribed in the form of combinations of two or more ingredients, it should be incumbent on the manufacturers who market such combinations to present to the Drugs Controller, Government of India, pharmacological and clinical data not only to prove the efficacy but also the

superiority of such combinations over the straightforward preparations included in the pharmacopoeia or the National Formulary. When such clinical data are presented the manufacturer should also suggest a generic name for it which, if acceptable, would form a generic name for that product and, if not acceptable, it may be open to the controlling authority to suggest an alternative generic name.

(Paragraph 13.26)

(21) The Patent Law is essentially meant to encourage inventions and in the national interest. Hence, all precautions need to be taken to see that patents which are granted in our country either in respect of indigenous or foreign inventions are not abused, *i.e.*, are not utilised to prevent further development.

(Paragraph 14.10)

(22) In the interests of saving of foreign exchange as well as possible economy of costs Parke-Davis, a manufacturer of the basic drug, Amodiaquin, should manufacture 4 : 7 dichloroquinoline from metachloro aniline, particularly when another unit with lesser facilities can do so and it should not therefore be allowed to import this intermediate. On the other hand, if it is not possible to do so, Bengal Immunity Co. should step up its production of 4 : 7 dichloroquinoline, so that it can meet the demand of other units also.

(Paragraph 15.7.1)

(23) It would be desirable for the other units producing the basic drug chloropropamide to utilise the same process as adopted by Bengal Chemical or alternatively a more efficient one or purchase locally produced intermediates.

(Paragraph 15.7.1)

(24) 8-hydroxyquinoline or dichloronitrobenzene needed for the manufacture of Iodo-chlor-hydroxy-quinoline should be produced locally.

(Paragraph 15.7.1)

(25) It is desirable to go into the reasons for the high cost of production of Vitamin-A by Glaxo Laboratories and if they are due to any process deficiencies, the unit should adopt the more efficient process of Roche Products.

(Paragraphs 15.7.2 and 28.2.2)

(26) Sarabhai Merck should pay serious attention to the reasons for the low yield of Vitamin C obtained by it

(Paragraph 15 7 3)

(27) It is relevant to consider whether manufacture of sulphadiazine involving a perpetual drain of foreign exchange for *importing raw materials should be continued once the manu-*facture of sulphadimidine from predominantly indigenous raw materials is established

(Paragraph 15 7 4)

(28) In order to have a more correct picture of the extent to which sub standard drugs are being produced in the country it would be desirable to have analyses separately for generic as *well as brand name products and also by units in the large scale* as well as the small scale sectors

(Paragraph 17 13)

(29) The anomalies pointed out by the manufacturers' association in the procedures of Central and State Excise Authorities should be removed.

(Paragraph 19 4 4)

(30) Imports of basic drugs should always be related to the requirements of the country Indian economy has not yet reached a stage and particularly in the chemical and pharmaceutical industries, where it can be exposed to competition from abroad or expected to establish its own market in the international field and compete at the level of international prices which in many cases are much lower than indigenous prices prevailing in the country of origin This industry, like other Indian industries has been enjoying protection in the form of quantitative restrictions of imports and if such protection is withdrawn all of a sudden and the industry is exposed to foreign competition, disastrous consequences are likely to ensue These have been amply demonstrated during our inquiry for the 18 drugs, when in the case of not less than six items, the fall in the domestic pro*duction and setback to the industry has resulted from unplanned* imports based on such estimates of production and demand, which were neither realistic nor helpful to the consolidation and development of the domestic unit Basic manufacture of drugs in the country has been established after considerable efforts and no steps should be taken which may retard the progress already made

(Paragraph 20 7)

(31) Unless the costs of production of basic durgs are brough down drastically, it is not possible to build up any substantia exports, except at the cost of the internal market and by sellin our products at less than half the cost.

(Paragraph 21.7)

(32) Sales promotion may be considered unobjectionable in the case of new drugs provided that no unsubstantiated claims are made but it should not be as relentless as it appears to be at the present moment in the case of already well established drugs and in any case the total expenditure on sales promotion should not exceed ten per cent of the ex-factory cost of the drug.

(Paragraph 22.2.4)

(33) The domestic prices of the selected drugs are generally very much lower in most cases in other countries.

(Paragraph 24.5)

(34) By and large, the prices in the Indian market of formulations compare favourably with the prices of similar formulations in the domestic markets of other countries.

(Paragraph 24.7)

(35) The price disparties of drugs sold under brand names and generic names are not because of these names but because of the units which manufacture them. Price differentials are in the present analysis mor a factor of standing and size of the units than of the brand name itself.

(Paragraph 24.12)

(36) A commission of 25 per cent (15 per cent to the re-ailer and 10 per cent to other intermediaries) may be allowed or ethical drugs. The commission allowed for non-ethical rugs may be 15 per cent, *i.e.*, 10 per cent for the retailer and per cent for other intermediaries.

(Paragraph 26.4)

(37) The sales turnover is roughly equivalent to the capital ployed in the case of manufacturers of basic drugs, very much her in the case of composite units and the highest for for-lators only. Manufacture of basic drugs is a capital-intensive vity and the profitability is to be judged from the point of v of the captial employed. On the other hand, formulating

activity by itself is not capital intensive and profitability is related to the sales turnover since capital employed is about half of the amount of sales turnover

(Paragraph 27 4 8)

(38) The fair ex-works selling prices recommended by us or the specified basic drugs are given in Table 28 2

(Paragraph 28 20 1)

(39) The fair selling prices recommended by us for the selected essential formulations are given in Tables 29 2 and 29 3 Additional charges for dispensing tablets and capsules in loose form may be allowed but no addition is needed in the case of vials, ampoules and tablet strips dispensed from larger packings

(Paragraphs 29 9 and 29 10)

(40) The selling prices recommended by us for formulations are generally lower than the prevailing market prices, although in some cases these may appear to be high Invariably in all such cases the present prices are based on imported materials the prices of which are lower than those of indigenous materials The prices worked out by us appear therefore to be higher since those are based on indigenous raw materials If such drugs continue to be formulated by using imported raw materials, the prices recommended by us would need to be revised

(Paragraph 29 11)

(41) The element of excise duty has not been taken into account in fixing prices of single drug formulations sold under generic names or brand names, although excise duty is payable on formulations sold under brand names We do not see any reason to distinguish between brand name and generic name formulations and hope that the use of brand names would be discouraged

(Paragraph 29 12)

(42) Our findings on cost of production of basic drugs by small scale units are given in paragraph 30 2

(Paragraph 30 2)

(43) Small scale formulating units do not afford any particular economy in comparison with those of the organised sector

(Paragraph 30 4)

## CHAPTER 33

## ACKNOWLEDGEMENTS

We wish to express our thanks to the representatives of drugs and pharmaceuticals industry, various associations connected with the industry and trade and representatives of Central and State Government departments for furnishing us with information and tendering evidence in connection with this inquiry. Our thanks are also due to the Assessors, Shri S. K. Borkar, Dr. B. Shah, Dr. K. Ganapathy and Dr. S. S. Gothoskar for their valuable suggestions and assistance with their expert knowledge of the industry. We are specially thankful to Dr. Gothoskar who being resident in Bombay, was available for day to day consultations and advice.

M. ZAHEER
CHAIRMAN

K. T. MERCHANT
MEMBER

S. SUBRAMANIAN
MEMBER

P. V. GUNISHASTRI
SECRETARY

Bombay, 26th August, 1968.

## APPENDIX I

( *Vide* Paragraph 3 1)

**List of firms/bodies/Associations to whom the Commission's questionnaires/letters were issued and those who replied.**

*Those who replied

@Those who replied that they did not come within the purview of the inquiry

I *Manufacturers of basic drugs*

(a) *Large scale units*

*1 Albert David Ltd , 5/11, D Gupta Lane, *Calcutta*-50

*2 Alembic Chemical Works Co Ltd Alembic Road, *Baroda* 3

*3 Atul Products Ltd , Atul, *Bulsar*

*4 Bengal Chemical and Pharmaceutical Works Ltd 164 Maniktala Main Road, *Calcutta* 54

*5 Bengal Immunity Co Ltd , Immunity House 153, Dharmatala Street , *Calcutta* 13

*6 Biological Evans Ltd , 18/1 & 3, Azamabad *Hyderabad* 20

*7 Bio-Chemical and Synthetic Products Ltd Sanatnagar, *Hyderabad*

*8 Boehringer Knoll Ltd United India Bldg P Mehta Road, *Bombay*-1.

*9 Boots Pure Drug Co (India) Ltd , 17, Nicol Road, *Bombay* 1

*10 Brahmachari Research Institute Pvt , Ltd , 82/3A Bidan Sarani, *Calcutta*-4

*11 Calcutta Chemical Co Ltd , *Calcutta*

*12 Chemo Pharma Laboratories Ltd , Plot No C S 215, Sewri, *Bombay*-15

*13 Cynamid India Ltd , 254-D2, Dr Annie Besant Road, P O Box 6577 , Worli, *Bombay* -18

*14 Dey s Medical Stores (Mfg ) Pvt Ltd , 6-D, Lindsey Street , *Calcutta*-16

*15 East India Pharmaceutical Works, Ltd , 102, Syamaprasad Mukherjee Road, *Calcutta*-26

*16 Glaxo Laboratories (India) Pvt , Ltd , Dr Annie Besant Road, Worli , *Bombay*-18

*17 Haffkine Institute, Parel *Bombay* 12

*18 Hind Chemicals Ltd , Harris Ganj, *Kanpur*

*19 Hindustan Antibiotics Ltd Pimpri *Poona* 8

*20 Hoechst Pharmaceuticals Ltd , Dugal House, Backbay Reclamation, *Bombay*-1

*21 Mac Laboratories Pvt Ltd , Vidyavihar, Kurol, *Bombay* 77.

*22 May & Baker Ltd , Bombay Agra Road, Bhandup, *Bombay*-78

*23 Merck Sharp & Dohme of India Ltd., Dugal House, Backbay Reclamation, *Bombay*-1.

*24 Oriental Pharmaceutical Industries Ltd., 64-66, Tulsi Pipe Road, Mahim, *Bombay*-16.

*25 Parke-Davis (India) Ltd., Kurla Andheri Road. Saki Naka, *Bombay*-70.

*26 Pfizer Ltd., ICICI Bldg., 163, Backbay Reclamation, *Bombay*-1.

*27 Roche Products Ltd., 28, Tardeo Road, *Bombay*-34.

*28 Sarabhai Merck Ltd., P. B. No. 80, Wadi Wadi, *Baroda*.

*29 Synbiotics Ltd., P. Box No. 129. Wadi Wadi, *Baroda*.

*30 Standard Pharmaceuticals Ltd., 67, Dr. Suresh Sarkar Road, *Calcutta*-14.

*31 Themis Pharmaceuticals, 38, Suren Road. Andheri East, *Bombay*-58.

*32 Unichem Laboratories Ltd., 4, 5, 6, Jogeshwari Estate, *Bombay*-60.

*33 Wander Pharmed Ltd., 33-A, New Marine Lines, *Bombay*-1.

*34 Wyeth Laboratories Ltd., Steelcrete House, Dinshaw Watcha Road, *Bombay*-1.

(b) *Small scale units*

*1 Alliance Trading Corporation P. Ltd.. 15, Suinhoe Lane, Kasba, *Calcutta*-42.

*2 British Medicine & Pharmaceutical Co., 44, Ezra Street, *Calcutta*-1.

*3 Eagle Laboratory, 17, Pollock Street, *Calcutta*-1.

*4 G. D. A. Chemicals Ltd., 36, Panditia Road, *Calcutta*-29.

*5 Dr. Karanth's Pharma-Chemical Industry, B-11, Industrial Estate, Sanatnagar, *Hyderabad*-18.

*6 Navarathna Pharmaceutical Laboratories. P. O. Box No. 13, Mattancheri, *Cochin*-2.

*7 Neogy Laboratories, 205, Netaji Subhas Road. Behala, *Calcutta* 34.

*8 Sunny, Industries (P) Ltd., 23/3/1B, Rupnarayan Nandan Lane, *Calcutta*-25.

*9 Syno-Chem Laboaratories, 16/1, Shamsul Huda Road, P. B. No. 16004, *Calcutta*-17.

*10 Suneeta Laboratories, 89B/90 Industrial Estate, Pologround, *Indore*.

*11 Swiss Chemicals, A-7-142/1 Golconda Cross Road, Musheerabad, *Hyderabad*-20.

## II. *Prospective manufacturers of basic drugs*

(a) *Large scale units*

*1 Atul Drug House, 85-D, Dr. Annie Besant Road, *Bombay*-18.

*2 Bayer India Ltd., 82, Veer Nariman Road, *Bombay*-1.

*3 Chemical, Industrial and Pharmaceutical Laboratories, Bellassis Road, *Bombay*-8.

*4 Chowgule (Hind) P. Ltd., India House, Fort Sreet, *Bombay*-1.

*5 Indian Drugs and Pharmaceuticals Ltd., 5, Parliament Street, *New Delhi* -1.

*6 Indian Research Institute P Ltd 3 Rustomjee Parsee Road, Cossipore *Calcutta* 2

*7 Kemp & Co Ltd, 88 C, Old Prabhadevi Road, *Bombay*-28

*8 New Pharma Industries Private Ltd, Kasturi Building, J Tata Road *Bombay*-1

*9 South India Research Institue, *Vijayawada* (A P)

*10 Warner Hindustan Ltd, Savoy Chambers, Wallace Street, *Bombay*-1

(b) *Small scale units*

*1 Gujarat Pharmaceutical & Chemical Works Near Chamundamata Asarwa, *Ahmedabad* 16

*2 Qunochem Laboratories, 893/1 Khan Bang *Sangli* (Maharashtra)

*3 Texdyes Corporation 127, Mahatma Gandhi Road *Bombay*-1

*4 Universal Chemicals Kothari Building Arthur Road *Bombay*-11

*5 Usan Laboratories P Ltd 13, Dattatraya Road Santa Cruz, *Bombay*-54

III *Formulators*

*Those who replied

○Those who replied that they were not manufacturing formulations of specified drugs

(a) *Large scale units*

Sl Nos 1 34 of I (a) above

Sl Nos 1 10 of II (a) above

@45 Ambala Pharmaceuticals Ltd Station Road Post Box No 4, *Ahmednagar*

*46 The Anglo French Drug Co (Eastern) Ltd 28 Tardeo Road, *Bombay*-34

@47 Alta Laboratories Ltd, P O Box No 5509, Vis onji Park, Naigam Cross Road, Dadar, *Bombay*-14

48 Amrutanjan Ltd, 14/15, Luzchurch Road *Madras*-4

49 Associated Capsules P Ltd, 131, Kandivli Industrial Estate *Bombay* 67

*50 Adcco Ltd, Adcco Nagar, *Hooghly Dt* (W Bengal)

*51 British Drug House (India) P Ltd, 18, Graham Road, Ballard Estate, *Bombay*-1

*52 Burroughs Wellcome & Co (India) P Ltd, 16, Bank Street, *Bombay*-1.

*53 Chemical Industrial & Pharmaceutical Laboratories, Ltd, 289, Bellassis Road, Byculla, *Bombay*-8

*54 Capsulation Services P Ltd, Bank of Baroda Building, Apollo Street, *Bombay*-1

*55 Ciba of India Ltd, 14, J Tata Road, Box No 1123, *Bombay*-1

*56 Cilag Hind Ltd, Kasturi Building, J Tata Road, *Bombay*-1

*57 Crookes Interfran Ltd, 254 D, Dr Annie Besant Road, Worli, *Bombay* 18

*58. The Fairdeal Corporation P. Ltd., Laxmi Buildings, Sir P. M. Road, P. Box No. 1925, *Bombay-1.*

*59 Geoffrey Manners & Co. Ltd., Magnet House, Ballard Estate, P. O. Box 976, *Bombay-1.*

@60 German Remedies P. Ltd., P. O. Box No. 1945, *Bombay.*

@61 Gluconate Ltd., 70-A, Prince Street., *Calcutta-13.*

62 Henry S. Clark & Co., Mission Raw Extension, *Calcutta-13.*

63 Hyderabad Chemical and Pharmaceutical Works Ltd., P. B. No. 182, Azamabad, *Hyderabad.*

@64 Indian Process Chemical Laboratory, Yeshwantapur P. O., *Bangalore-22.*

*65 Indo-Pharma Pharmaceutical Works P. Ltd., 83, Kohinoor Road, Dadar, *Bombay-14.*

*66 Intrac Pharmaceuticals, P. O. Box No. 1464, *Madras-18.*

@67 Johnson & Johnson Ltd., 30, Forjett Street., *Bombay-26.*

*68 Khandelwal Laboratories, 79/87, Kala Chowki Road, Post Box No. 7808, *Bombay-33.*

*69 Laboratoies Grimault Pvt. Ltd., 20, Haines Road, *Bombay-11.*

70 Mehta Pharmaceuticals P. Ltd., G. T. Road, Chheharta, *Amritsar.*

*71 Martin & Harris (Pvt.) Ltd., 182, Acharya Jagadish Chandra Bose Road, *Calcutta-14.*

@72 The Mysore Industrial & Testing Laboratory Ltd., I. T. L. Buildings, Malleswaram, *Bangalore-3.*

@73 Nila Products Ltd., 98, Dadar Main Road, *Bombay-14.*

74 Prof. Gajjar's Standard Chemical Works Ltd., 2, Masani Lane, Kurla, *Bombay-70.*

@75 Pharmed P. Ltd., 76, C Rafi Ahmed Kidwai Road, *Bombay-19.*

@76 Richardson Hindustan Ltd., Tiecicon House, P. O. Box No. 6276, Haines Road, *Bombay-11.*

*77 Rallis India Ltd., (Pharmaceutical Division). Ralli House 21, Ravelin Street, *Bombay-1.*

78 Raptakos, Brett & Co. P. Ltd., P. Box No. 6562, 47, Dr. Annie Besant Road, Worli, *Bombay-18.*

79 Reckitt & Colman of India Ltd., 41, Chowringhee Road, *Calcutta-16.*

80 Sarabhai Chemicals, (Karamchand Premchand Pvt. Ltd.,) Post Box No. 31, Wadi, Wadi, *Baroda.*

Suhrid Geigy Ltd., P. O. Box No. 48, Wadi, Wadi, *Baroda.*

Sanitex Chemical Industries, Industrial Road, *Baroda-3.*

Smith & Nephew (India) Ltd., 'Parijat', Marine Drive, *Bombay-2.*

Sandoz India Ltd., Dr. Annie Besant Road, Worli *Bombay-18.*

Smith Stanistreet & Co., Ltd., 18, Convent Road, *Calcutta-14.*

Spencer & Co. Ltd., 153, Mount Road, *Madras-2.*

Stddmed Private Ltd., 84, Chowringhee Road, *Calcutta-20.*

Therapeutic Pharmaceuticals P. Ltd., 54, Proctor Road, *Bombay-1.*

@89 Tata Fison Industries Ltd, Union Bank Building Dalal St, Fort, *Bombay-1*

*90 U S Vitamin & Pharmaceutical Corporation India Ltd, 45 Forbes Street, Fort, *Bombay-1*

*91 Zandu Pharmaceutical Work Ltd, Gokhale Road South *Bombay* 28

@92 Cheebrugh Ponds Incorporated, 13, Ganesh Street *Bombay* 1

@93 Miller & Pupp (India) Pvt Ltd Queen's Mansions Bastion Road *Bombay* 1

@94 J K Helene Curtis Ltd J K Building, Ballard Estate, *Bombay-1*

@95 Hoechst Ltd, Ewart House, Bruce Street *Bombay* 1

@96 Shalimar Asia 73/74, 'Advent' Foreshore Road, *Bombay-1*

@97 Smith Kline & French (India) Ltd, 25-31 Rope Walk Lane, *Bombay* 1

@98 Colgate-Palmolive (India) P Ltd, Steelcrete House, Dinshaw Watcha Road, *Bombay-1*

@99 Gillanders Arbuthnot & Co Ltd, Post Box No 281, *Bombay-1.*

@100 J L Morrison, Son & Jones (India) Ltd, 'Crystal' 79, Dr A. Besant Road, *Bombay-18*

@101 Vicks Products India, Tieeicen House Heine Road, *Bombay-11*

@102 T T Krishnamachari & Co, Post Box No 200, *Madras-1*

@103 Tata Chemicals Ltd Bombay House Bruce Street *Bombay* 1

@104 Hindustan Organic Chemicals Ltd *Rasayani* (Dt Kolaba)

@105 Indian Shaving Ltd, Mercantile Chambers, Graham Road, Ballard Estate, *Bombay-1*

@106 Parry & Co Ltd, Dare House, *Madras* 1

(b) *Medium and small scale units*

Sl No 1 11 of I(b) above

Sl. No 1-5 of II(b) above

*17 Acichem Laboratories, 1, Prabhat Nagar, Jogeshwari (West) *Bombay-60.*

*18 Akin Laboratories, 11 5-8, Nampalli, *Hyderabad-4* (A P)

*19 AMAVA 2/1, Bidhan Sarani, *Calcutta*

*20 Amoe Research & Pharmaceutical Works, 220, Himalaya House, Phalton Road Fort *Bombay* 1

*21 Ateo Pharma Laboratories, 135 Princes Street *Bombay* 2

*22 Auxil Pharmaceutical, 1, Swami Vivekananda Road, Andheri (West), *Bombay* 58

*23 Beacham India Pvt Ltd, Mahim, *Bombay-16*

*24 Bharat Pharmaceuticals 135/36, Andheri Kurla Road, *Bombay-69*

*25 Biochem Pharmaceutical Industries, 'A' Adun Bldg, 1st Dhobitalao Lane, Post Office Box No 2217, *Bombay* 2

*26 Binichem Laboratories, 123/24 Andheri Kurla Road, Old Ashram, *Bombay-69*

*27 Bengal Health Products Pvt. Ltd, Dehiserampur Road, *Calcutta-14.*

*28 Bronkol Pvt. Ltd., 63, S. K. Dey Road, *Calcutta*-48.

*29 Croydon Chemical Works P. Ltd., Post Box No. 1992, 25, Dalal Street, *Bombay*-1.

*30 Cadila Laboratories, Ghodasar, Maninagar, *Ahmedabad*-8.

*31 Chelsea Chemical Laboratories, Hadapsar Industrial Estate, *Poona*-13.

*32 Comteck Laboratories, 85, Dr. Annie Besant Road, Worli, *Bombay*-18.

*33 Diamond Drugs and Chemical Works, 37, Shri Gopal Mullick Lane, *Calcutta*-12.

*34 Duggan Laboratories (India), Pushpa Housing Society, Daftary Road, Malad (East), *Bombay*-64.

*35 Emsons Pharmaceuticals Pvt. Ltd., 144A, Rashbehari Avenue, *Calcutta*-29.

*36 Eastern-Pharma Products, 45/D/1, Moore Avenue, *Calcutta*-40.

*37 Eison Pharmaceutical Co. (Pvt.) Ltd., 1246, Apte Road, *Poona*-4.

*38 Edison Continental Laboratories Pvt. Ltd., 135, Annie Besant Road, Worli, *Bombay*-18.

*39 Fleming Pharmaceuticals, 30-A.C, Parsee Panchayat Road, Andheri (East), *Bombay*-69.

*40 Franco-Indian Manufacturers Ltd., Bapnu Ghar, Hornby Vellard, *Bombay*-18.

*41 Flora Pharma, 58/72, Birhana Road, *Kanpur*.

*42 G. D. A. Chemicals Ltd., Panditia Road, *Calcutta*-29.

*43 Gurco Pharma Pvt. Ltd., 35 M. Block, Connaught Circus, P. O. Box No. 655, *New Delhi*-1.

*44 Glucodex Laboratories (P) Ltd., 22/1/1A, Rajamahindra Road, Paikpara, *Calcutta*-37.

*45 Imperial Pharmaceutical Products, 49, Dockyard Road, Mazgaon, P. O. Box, 16234, *Bombay*-10.

*46 Ipca Laboratories P. Ltd., 95, Morland Road, Byculla, *Bombay*-8.

*47 Indian National Drugs Co. Pvt. Ltd., 5/2 Beleghata Main Road, *Calcutta*-10.

*48 Indo-French Pharmaceutical Co., Catholic Centre, P. O. Box No. 1226, *Madras*-1.

*49 Jaggat Pharma Pvt. Ltd., Plot No. 4, Shantinagar Industrial Estate, Vakola, Santacruz East, *Bombay*-55.

*50 Lyovak Laboratories, 26-Nathoo Industrial Estate, Andheri-Kurla Road, *Bombay*-59.

*51 Lyka Labs., Subhas Road A, Vile Parle (East), *Bombay*-57.

*52 Milnex Laboratories, 9, Sprot Road, Ballard Estate, *Bombay*-1.

*53 Medical Products of India, 101/103, Bhagat Singh Road, Vile Parle West, *Bombay*-56.

*54 Neil Pharmaceuticals, Post Box 7902, Tulsiwadi Post Office, D-4, Commerce Centre, Tardeo Road, *Bombay*-34.

*55 Navarathna Pharmaceutical Laboratories, P. O. Box No. 13, Manthra Road, *Cochin*-2.

*56 Nivea Pharmaceuticals Pvt. Ltd., Post Box No. 174, Gillander House, *Calcutta*-1.

*57 Nymph Laboratories, 164, Tulsi Pipe Road, Opp Phoenix Mills, Lower Parel, *Bombay-13*

*58 The Orissa Red Cross Blood Bank, Manglabag, *Cuttack.*

*59 Pharman Laboratories, Machavaram, *Vijayawada-4* (A P)

*60 Pharma Medico (India) Pvt Ltd, 1, Prabhat Nagar, Jogeshwari (West), *Bombay-60*

*61 Pharma-Products Pvt Ltd, 1, Vallam One Road, Thanjavur, *Madras*

*62 Pharmaceutical & Research Laboratories, 90 D- Guruswamy, Mudaliar Road, *Madras-10*

*63 Pharm-Chem Manufacturing Corporation, 11, Chakravarthy Ashok Road, Kandivli East, *Bombay-67*

*64 Phoenix Drug House Pvt. Ltd., 30 A K P Roy Lane, *Calcutta-31*

*65 Pharmakon Laboratories, 22/A, G B Road, Malad, *Bombay 64*

*66 The Pharmed Research Laboratory, 39/G, Feeder Road, *Calcutta-56*

*67 Royal Laboratories, J Nehru Road, Afzal Gunj *Hyderabad-12*

*68 Retort Laboratories, 9-A, McNichols Road, *Madras 31*

*69 Roc Pharmaceuticals, 808 B, Ambedkar Road Near Brodway Cinema, Dadar, *Bombay-14.*

*70 Samarth Pharmaceuticals, Ram mandir Road, Oshiwara Bridge, Goregaon (West), *Bombay-62*

*71 The Syntho Pharma Pvt Ltd, 80/81, Krishna Bazar, Cloth Market *Delhi-6*

*72 Shettys Pharmaceuticals and Biological Ltd, A-7-12 Mushirabad, *Hyderabad* 20(A P)

*73 Sarpin Pharmacal, 2, Nanabhoy Lane, Fort, *Bombay-1*

*74 Surya Chemicals, Daliganj, *Lucknow-7*

*75 Stamac Products, 103A/108B, Hazra Road, *Calcutta 56*

*76 Sanways (India) Pvt Ltd, Wassiamal Bldg, (Block No 19), Grant, Road, *Bombay-7*

*77 Trinity Laboratories, Dady Seth House, 44, Cawasji Patel Street, *Bombay-1*

*78 United Pharma (India) Pvt Ltd, 95, Nyneappa Naik Street, P O Box No 52, *Madras 3*

*79 Lyvite Laboratories (India) P Ltd, Tamarind House, A/G Tamarind Lane, *Bombay 1*

*80 Emson & Co, 266, Jawahar Nagar, Goregaon, *Bombay-62*

*81 Pelican Pharmaceuticals & Chemical Industries, Maheswar Darshan, Barrement No 3, 4, S V. Rao, Santacruz, *Bombay-54.*

@82 Asepticus Company, Swadeshi Market, Kalbadevi Road, *Bombay-2.*

@83 Bharat Drug House, Devkaran Mansion, 20, Mangaldas Road, P. B No. 2570, *Bombay-2.*

@84 Dipak Laboratories, 55, Canning Street, Western Portion, 2nd Floor, Room No 16, *Calcutta-1.*

@85 Great India Industrial & Pharmaceutical Laboratories, 221, Jjibhoy Lane, *Bombay*-12.

@86 Ramco Chemical Works, 661/6, Kanuga Mansion, Kopasis Bazar, Railway Post, *Ahmedabad*.

@87 Pharmachmicals, Kolaiwalla Bldg. Soneri Road, Vile Parle East, *Bombay*-57.

@88 Ellis & Martyn, Opp. G.P.O. Kothari Mansion, P.O. Box 414, *Bombay*-1.

@89 Incons Industrial & Technical Consultants & Analytical Chemists, Vishweshwar Nagar, Vikas Estate, Off Aarey Road, Goregaon (East), *Bombay*-62.

@90 The Whitehall Pharmacy (Pvt.) Ltd., 131, Lower Circular Road, *Calcutta*-14.

@91 The Carbon Laboratories, 17, Mall Road (Dum-Dum), *Calcutta*-28.

@92 Hofal Chemicals, Udaipur Distillery Co. P. Ltd., Udaisagar Road, *Udaipur* (Rajasthan ).

@93 C. E. Fulford (India) Pvt. Ltd., Elphin House, 88C, Old Prabhadevi Road, *Bombay*-28.

@94 Jadavpur University, *Calcutta*-32.

@95 Assam Chemical & Pharmaceutical Ltd. Dr. Jyotish Das Road, *Gauhati*-1.

@96 A.K. Dalvi & Co., 167, Netaji Subhas Road, Room No. 1, Rajakotra *Calcutta*-7.

@97 Nicholas of India Ltd., 11/12 Off Haines Road, *Bombay*-18.

@98 Suren Chemicals, Amin Industrial Estate, Sonawala Cross Road, Goregaon (East), *Bombay*-62.

@99 Paramount Labs. Pvt. Ltd., 343, B. B. Road, *Madras*-60.

@100 Bharat Pulverising Mills, Pvt. Ltd., Hexamar House, Sayani Road, *Bombay*-28.

@101 Eagle Pharmaceutical Works, 114, Belgrami Road, Kurla West, *Bombay*.

@102 Pilco Pharma, Parvati Kuti, Pandu Nagar, *Kanpur*.

@103 B. A. & Brothers (Eastern) P. Ltd., 6, Clive Row, P.O. Box 2809, *Calcutta*-1.

@104 Khatau Vallabhadas & Company, Indian Globe Chambers, Fort Street, *Bombay*-1.

@105 Kanchanlal Vadilal & Co., 41-43, Mangaldas Road, P.B. No. 2233, *Bombay*-2.

@106 Daruvala Bros. Pvt. Ltd., 40, Princess Street, *Bombay*-2.

@107 Bahola Pharmaceutical Co., Homco House, Bakthapuri Street, *Kumbakonam*.

@108 Cama Norton & Co., Cama Chambers, Medows Street, *Bombay*-1.

@109 Dr. Paul Lohmann India Ltd., B/11, Industrial Estate, Sanatnagar, *Hyderabad*.

@110 Eli Lilly & Co. of India Inc., Sadhana Rayon House, Dr. Dadabhai Naoroji Road, *Bombay*-1.

@111 Chudger & Co Pvt Ltd, Anand Bhuvan 2nd Floor Post Box No 2448, Princess Street, *Bombay-2*

@112 Baudh Chemical Works, Aska Road *Berhampur*

@113 Free India Impex Agency, Raja Bahadur Compound 24B, Hamam Street, Fort, *Bombay-1*

@114 Lumega Corporation, 21, Western India House, Sir Phirozshah Mehta Road, Fort, *Bombay-1*

@115 Romex Pharmaceuticals, 7, Nawab Building, 325, D Naoroji Road, *Bombay 1*

@116 Intercontinental Pharma, Rahimtoola House, 3rd Floor, Homji Street *Bombay-1*

@117 Bhattacharyya & Co, 85, Netaji Subhas Road, *Calcutta* 1

@118 B-Tex Ointment Mfg Co, B Tex House, 80 B C D Government Industrial Estate, *Bombay-67*

@119 Chem Med Analytical Laboratories, 27-Western India House, Sir P M Road, *Bombay-1*

@120 International Trading Co, Manhar Building, 187, Lohar Chawl, *Bombay-1.*

@121 Amin & Ismail P Ltd, 80, Colootola Street, *Calcutta* 1

@122 International Chemical & Biological Institute Pvt Ltd, 28/1, South End Road *Bangalore-4*

@123 Scientific Research Industries (India) Pvt Ltd, 4, Chitwapur Road, *Lucknow* 1

@124 Badhwar & Co, Bhagirath Palace, Chandni Chowk, *Delhi*

@125 G W Cornric Co (Asia) Ltd, Queen's Mansions, Bastion Road, Fort, *Bombay*

@126 Warden Chemical Works, Bani Park *Jaipur*

@127 T M. Thakore & Co 43, Churchgate Street, Fort, *Bombay-1*

@128 Kings & Co *Allahabad*

@129 Sapat & Co 113 Cavel Street, *Bombay-2*

@130 Emed a Export Co m b h, Commercial House, 87, D Annie Besant Road, Worli, *Bombay-18*

@131 Abbott Laboratories (India) Private Limited, Jehangir Building, 133, Mahatma Gandhi Road, *Bombay-1*

@132 Kosmek Private Limited, Cecil Court Lansdowne Road, Apollo Bunder, P O Box No 680, *Bombay-1*

@133 Triumph's Products, K S A Building, Bhavani Shankar, Dadar, *Bombay 28*

@134 Birlab Pharma Birth hold Labs, D/Mine Sarvodoy Hospital Estate, Rly Crossing, Chembur, *Bombay 71*

@135 Libra Drugs (India) 92, Mangalwar Peth, *Poona-11*

@136 India Marine & Food Products (P) Ltd, 8-B, Western India House, Sir P Mehta Road, *Bombay 1*

@137 Khettry and Co 89, Beadon Street, *Calcutta* 18

@138 Madhusudan Dey and Sons, 13, Bonfield Lane, *Calcutta-18*

@139 Benger Pharmaceutical Division Union Bank Building, Dalal Street, *Bombay-1*

@140 Navil Laboratories, Noor Mahal, 117/127, Tardev Road. *Bombay*-34.

@141 Chemosyn Pvt. Ltd.. 38, Sures Road., Andheri (East) *Bombay*-34.

@142 Cosme Matias Menezes P. Ltd., Rua S. Thome. *Panjim*, (Goa).

@143 Universal Pharmacy, Itwari, *Nagpur*-2.

@144 Mendine Pharmaceutical Works, 36, Alipur Road, *Calcutta*-27.

@145 Chemed Laboratories. "Sadhna", Nowroji Gamadia Road. *Bombay*-26.

@146 Dolphin Laboratories Pvt. Ltd., 1, Allenby Road, *Calcutta*-20.

@147 Orient Pharma Pvt. Ltd., 1/6, Old Trunk Road. Pallavaram, *Madras*-43.

@148 Madon Sons & Co., Devkaran Mansion, Ist Floor. 63. Princess Street, *Bombay*-2.

@149 J. B. Modi & Co.. New Bhalia Baug Building, 121. Fort Street, *Bombay*-1.

@150 Government Pharmaceutical Works, Baramulla. *Kashmir*.

@151 Manutex Laboratories, Main Raod, Rayagada, (Koraput Dt.) *Orissa*.

@152 New International Chemicals (P) Ltd.. Civil Lines. *Bara Banki*.

@153 Vitamin Labs. of India P. Ltd., Krishna Nagar. *Lucknow*.

@154 Alma Laboratories. Fort House, Behind Handloom House. D. N. Road, *Bombay*-1.

@155 Asli Dawakhana, Tilak Dwar, *Mathura* (U.P.).

@156 Associated Corporation of Industries (India) P. Ltd.. Commerce House, Currimbhoy Road, Ballard Estate. *Bombay*-1.

@157 Dr. Balachandra Laboratories, 215, Charni Road. Girgaum, *Bombay*-4.

*158 Bombay Drug House, Pvt. Ltd., Nair Mahal, Tulsipipe Road, *Bombay*-26.

@159 Thera Chem Laboratories, 8/281, Tardeo Road. Prem Bhuvan, *Bombay*-7.

@160 Magna Laboratories, 2nd, Hasanabad Lane, Suman Villa, *Bombay*-54.

@161 KAB Pharma Pvt. Ltd. Sunoo Lodge, Dadar T.T., *Bombay*-14.

@162 Seamless Capsules Pvt. Ltd., 81-82, Kurla Andheri Road, *Bombay*-59.

@163 Sigma Laboratories, Plot No. 43. (South). Wadala. *Bombay*-31.

@164 International Chemical & Biological Institute Pvt. Ltd., 28/1, South End Road, *Bangalore*-4.

@165 The Arpi Chemical Industries, *Kasganj* (U.P.)

@166 Ajmera Chemical Works, 12th Khetwadi Bunglow, *Bombay*-4.

@167 Hindustan Chemists & Druggists Co. Pvt. Ltd., 61, Sovabazar Street, *Calcutta*-5.

@168 Loyds Pharmaceutical Co., 24, Darayaganj, *Delhi*-6.

@169 Antibiotic Stores Pvt. Ltd., 55, Canning Street, G.P.O. Box No. 722 *Calcutta*-1.

@170 Chemi Pharm & Pharmaceutical Products, Vishweshwar Nagar Vikas Estate, Goregaon, *Bombay*-62

@171 Narindar S. Uberoi & Bros., National House, Tulloch Road, Appollo Bunder, *Bombay*-1.

@172 Sarvodaya Laboratory, 2/200-A, Station Road, Goregaon (West), *Bombay*-62.

@173 Idomex Chemicals, Miraj, *Sangli*.

@174 Panama Industries & Laboratroies, 45-47, Veer Nariman Road, *Bombay*-1

@175 Mega Pharma Laboratories, K. Lekhraj Buildings, Carnac Bridge, *Bombay*-3

@176 Nath Laboratories, Yusufguda Road, Begumpet Post, *Hyderabad*-16.

@177 Ward Blenkin & Co. (India) Ltd, Vikas Estate Goregaon (East), *Bombay*-62

@178 Metro Golden Laboratories (India), 292-A, Bellasis Road, *Bombay* 8.

@179 National Drug & Chemical Works, 21-J Lady Jamshedji Road, Mahim, *Bombay*-16

@180 Western India Chemical Co, 2, Anand Niwas Borivli, *Bombay*-92.

@181 Zenith Chemical Works P Ltd., 4, French Bridge *Bombay*-7

@182 Rippen Pharmaceutical Laboratories, No 2 Princess Street, *Bombay*-2

*183 Delta Pharma, 11, Homji Street, *Bombay*-1

@184 Industrial Research Laboratories, Chandni Chowk, *Delhi*-6.

@185 Modern Chemical Works Pvt Ltd, 1541, Kashmeri Gate, *Delhi*

*186 Sahib Singh Manufacturing Co P. Ltd, 7, Okhla Industrial Estate, *New Delhi*-20

@187 Rajvaidya Shital Prasad & Sons, Chandni Chowk, *Delhi*-6.

@188 Chemical and Pharmaceutical Laboratories 285 G T. Road *Delhi* 32.

@189 Swan Surgical Dressings, F-2/25 Model Town, *Delhi*.

@190 H C Sen & Co., H. C. Sen Road, *Delhi*-6

@191 Carbo Laboratories (India), P B. No. 358, *New Delhi*-21.

@192 Assam Chemical & Pharmaceutical Ltd, Dr J C Das Road, *P O. Gauhati*

@193 Doson Chemicals (P) Ltd, Kamarpatty Fancy Bazar, *Gauhati* 1

@194 Goila Chemical Works, P O. Rangiya Station Road, *P O Rangiya* (Kamrup Dt. Assam).

@195 Indian Oxygen Ltd, 48/1, Diamond Harbour Road, *Calcutta*-27.

@196 United Colours & Chemicals (Assam) P. Ltd, Panbazar, *Gauhati*-1.

@197 Lachit Laboratories P. Ltd, Kamarpatty Road, P O *Gauhati*-1

@198 Galen Pharmaceuticals, Panbazar, *Gauhati*-1.

@199 National Chemical & Perfumery Works, Fatasil, P O *Gauhati*-9.

@200 Eastern Assam Chemical Industries P Ltd, *Dibrugarh* (Assam).

@201 Neo Chemicals, 458, 466, G T. Road, Sahdara, *Delhi*-32.

@202 Dulat Pharmaceutical Works, *Delhi*-5

@203 Hindustan Insecticides Ltd., Rohtak Road, *Delhi*-15.

@204 Pure Pharmaceutical Works, 18-474, Nai Basti, Kisanganj, *Delhi*-7.

205 Indoco Remedies Ltd., 457, S. V. Patel Road, *Bombay*-4.

206 Kee Pharma, Jaihind Building, Bhagirath Palace, *Delhi*-6.

207 Cochin Pharmacal Co., P.O. Punkunnu, Trichur-2, (*Kerala*).

208 Hebbals Pharmaceutical & Foods, 2nd Floor, 44, Dady Sheth House, Cawasji Patel Street, *Bombay*-1.

@209 Mount Mettur Pharmaceutical Ltd., 3, Greenways Road, Raja Annamlaipuram Post, *Madras*-28.

210 Penta Pharma Laboratories, Evens Fraser Annex, 38, Police Court Lane, *Bombay*-1.

211 Hemmo Pharma, C-6, Bharucha Building, Princess Street, *Bombay*-2.

212 Kim's Laboratories, 11, Pushpa Kunj, 50, Sion Road, *Bombay*-22.

213 Pargaon Laboratories, F-4, Bardanwala Road, *Jamnagar* (Gujarat).

214 Andre Laboratories, Aidur Building, 1st Dhobi Talao Lane, *Bombay*-2.

215 Mepro Laboratories, Ganeshmal Sobhagnmal Building, Sheikh Memon Street, *Bombay*-2.

216 Calico Pharmaceutical Works, 9, Ganguli Para Lane, *Calcutta*-2.

217 The Himalaya Drug House, 251, Dr. D. Naoroji Road, *Bombay*-1.

218 A. K. Dutta & Co. P. Ltd., 115, Canning Street, *Calcutta*-1.

219 Delux Pharma, Municipal Godown Road, *Abu Road* (Rajasthan).

220 The Trinity Pharmaceuticals (India) P. Ltd., Post Box No. 88, *Trichur*-1 (Kerala).

221 Associated Drug Co. P. Ltd., Sampangi Bank Road, *Bangalore*-2.

222 Bipharma Laboratories, 229/230, Hind Rajasthan Industrial Estate, Naigaum Cross Road, *Bombay*-31.

223 Amarchand Sobachand, 95, Nyneappa Naick Street, *Madras*-3.

224 Wilfred Pereira P. Ltd., No. 2, Hunter's Road, Vepery, *Madras*-7.

225 Everest Pharmaceuticals Works, Everest Nagar, *Bhatinda* (Punjab).

226 Atul Pharma & Surgical Dressing Co., 11, New Bhoiguda, *Secunderabad*.

227 Chudgor & Co. P. Ltd., Chemical House, Bombay Agra Road, *Thana* (Maharashtra).

228 Pratap Industries, P.O. Box No. 22, *Tirur* (Kerala).

229 Kopran Chemical Co. P. Ltd., Andheri Kurla Road, Saki Naka, *Bombay*-72.

230 Empire Chemical Works, 11-A, Bombay Agra Road, Vikhroli, *Bombay*-79.

231 Eros Pharma, 2, Mangal, 76, Rafi Ahmed Kidwai Road, *Bombay*-19.

232 Orion Laboratories, 210, Dr. D. Naoroji Road, Taj Building, *Bombay*-1.

233 The Bassein Drug & Pharmaceutical Products P. Ltd., 99-B, Lady Hardinge Road, Mahim, *Bombay*-16.

234 Primco P. Ltd., Lamington Road, *Bombay*-4.

235 Wilson Medicine Co., Kotkai Building, 391, Arthur Road, *Bombay*.
236 Unique Pharmaceutical Laboratories, Mohalta Bhavan, Off Hains Road, Worli, *Bombay*-18
237 Devens Pharmaceuticals, Fatima Building, Mogal Lane, *Bombay*-16
238 Elite Laboratories, 122, Himalaya House, Palton Road, *Bombay*-1.
239 Charak Pharmaceuticals, Evergreen Industrial Estate, Shakti Mills Lanes, *Bombay*-12
240 Bell Pharma, 74, BTC Mantri Building, Gokhale Road, South, *Bombay*-28
241 Mercury Pharmaceutical Industries, 62, Gurudwara Building, Vincent Road, Dadar, *Bombay*-14
242 Oriental Research & Chemical Lab Ltd , Qumaresh House Salkia, *Howrah*.
243 Treatment Home Products, 36, Creek Road, *Calcutta* 14
244 Drug Deal Corporation, Baghphul, Rohtak Road, *New Delhi*
245 Cyper Pharma, Najafgarh Road, *New Delhi*
246 Delhi Chemicals & Pharmaceuticals Works Darya Ganj, *Delhi*
247 Deltas, 59, Daryaganj *Delhi*
248 Jhones & Wexoes (India), 3 C/30, Rohtak Road *New Delhi*
249 Modern Chemical Works, Kashmeri Gate *Delhi*
250 Civil Drugs Labs , D-2/14, Model Town, *Delhi*
251 Washewa Brothers, 3/C-15, Rohtak Road, *Delhi*
252 Medicos Products, Ramesh Naga *Delhi*
(i)253 Gajjar & Co , Manufacturing Chemists, Princess Street, *Bombay*-2.
254 Dacruz Corporation, 44, Cowasji Patel Street, *Bombay*-1
255 Corrigan Pharmaceutical , No 11, Bank Street, Fort, *Bombay*-1
256 Semit Products P Ltd , 27, Western India House, Sir P M Road, *Bombay*-1
257 Linkson Pharma, 152, Nyniappa Naick Street *Madras*-3
258 Garutman Industries P Ltd , 86-A, Nyniappa Naick Street, *Madras*-3.
259 Parwal & Sons, 153, Nyniappa Naick Street, *Madras*-3
260 Orient Pharma P Ltd , Pallavaram, *Madras*-43
261 Bharat Salt & Chemical Industries Ltd , Oriya Bazar, *Cuttack*
262 Bharat Baisajyam, Mathupatna, *Cuttack* 3
263 Biswanath Ayurved Bhavan, Marwaripura Dist *Sambalpur*
264 Choudhury Chemical Factory, *Bolangir* (Orissa)
265 Hari Surgical Dressings, Banka Bazar, *Cuttack*-2
266 Indian Shark Products, Industrial Estate, Jagatpur, Dist *Cuttack*,
267 Jagannath Chemical & Pharmaceuticals Industries, Madhupatna *Cuttack*-3
268 Jaya Bharat Pharmaceutical Industries *Bolangir* (Orissa)
269 Madhusudan Chemical Industries, Madhupatna, *Cuttack*
270 Nova Pharmaceuticals (P) Ltd , Cantonment Road, *Cuttack*
271 Orissa Fisheries Development Corporation, Tuls pur, *Cuttak* 1

272 Orissa Chemical Industries, Khariar Road, *Kalahandi.*
273 Orichem Laboratory, Mukhpath, Station Road, *Puri.*
274 Pharma Drugs Mfg. Co., 7/8, Industrial Estate, *Jammu Cantt.*
275 Onyx Laboratories P. Ltd., Kidwai Nagar, *Kanpur.*
276 Swastic Pharmaceutials, G. T. Road, *Varanasi.*
277 Allodial Chemical Mfg. Co., 90, Kannon Geyan Street, *Meerut.*
278 Spa Pharma, 120/255, Lajpat Nagar, *Kanpur.*
279 Garga Pharma (P) Ltd., Talkatora Road, *Lucknow.*
280 Drug Research Laboratory, Canal Road, *Jammu.*
281 Harrison Laboratories, Hospital Road, *Kanpur.*
282 U P. Drug House Pvt. Ltd., 38, Major Banks Road, *Lucknow.*
283 Rashtradeep Laboratories, 78, Purani Mandi, *Firozabad* (Agra).
284 Martand Pharmaceuticals, *Baraut* (Meerut).
285 Narain Chemicals Industries. 117/515, Pandu Nagar. *Kanpur.*
286 Parker Pharma (P) Ltd., 18-A, Fazalganj, *Kanpur.*
287 G Paraxen & Co. P. Ltd., Tulsi Das Marg, *Lucknow.*
288 Reylite & Co., Western Court Road, *Meerut*
289 ABM Research Institute, Hapur, Distt. *Meerut.*
290 Northern India Chemical Works, Dettel Village, *Meerut.*
291 King Pharmaceutical Works, Industrial Colony, *Allahabad.*
292 Kanchanlal Maganlal & Co., *Bombay*-2.
293 Boson & Co , 44, Ezra Street, *Calcutta*-1.
294 Jugal & Co., 46-B, Netaji Subhas Road, *Calcutta*-1.
295 Piya Pharmaceuticals, Mohannagar, *Gaziabad* (U.P.)
296 Wootom Pharmacy, Baidyanath, Deoghar, *Bihar.*
297 Bengal Pharmacy, 68-A, Bhupen Bose Avenue, *Calcutta*-4.
298 Nandy Brothers (P) Ltd., 31, A. T. Mukherjee Road, *Calcutta*-20.
299 People's Pharmacy P. Ltd., 90A, S. P. Mukherjee Road, *Calcutta*-26.
300 Papu Products, Tejpal Scheme Road, No. 5, Vile Parle East, *Bombay*-57.
301 Tarachem Laboratories, 8/281, Tardeo Road, Prem Bhuvan, *Bombay*-7.
302 Vilco Laboratories, Subhas Road, Vile Parle East, *Bombay*-57.
303 Alfred Berg & Co (India) P. Ltd., Gokul Baugh, High Road, Arumbakkam, *Madras*-29.
304 Bena Laboratories, Ambica Terrace, 117, Clive Road, *Bombay*-9.
305 Ashok Bio-Pharma Ltd., 10/12, Swinhoe Lane, *Calcutta.*
306 Bharathi Chemical Works, 67/42, Strand Road, *Calcutta.*
307 Emke Pharmaceutical P. Ltd., 182, Ryabahadas Ambia Charan Roy Road, *Calcutta*-24.
308 Avee Vitamins, Main Street, *Madras.*
309 Capilex Corporation, 13, Greenways Road, *Madras.*

310 St Sarma Laboratories, Murugesa Mudaliyar Street, *Madras*

311 James Hill & Co, Ramkutty Tagore Villa, Alambazar, *Calcutta-35*

312 Jadavpur University, *Calcutta* 32

313 Tablets Pvt Ltd, Express Estate *Madras-2*

314 Thio-Calcin Co, P B 904 *Madras* 20

315 All India Mission Laboratories, Bengal Pet, *Kolar* (Mysore)

316 King's Institute, Guindy, *Madras-32*

317 Ruby Laboratories, Jai Hind Society, *Ahmedabad*

318 Ravi Chemical Pharm., Hanuman Peth, *Vijayawada* (A P)

319 Rintabs Pharm, Vile Parle, *Bombay*

320 Central Research Institute P Ltd *Post Kasauli* (Punjab)

321 Aero Pharma, Shah Baug, 1, Peddar Road, *Bombay-26*

322 Amortex Agencies Pvt Ltd, Gowalia Tank, 52, Warden Court, *Bombay-26*

323 Ancil Pharmaceuticals, Padma Niketan, Goregaon (East), *Bombay-62*

324 Ar Ex Laboratories, 21, Sitaladevi Temple Road *Bombay* 16

325 Cex-Pharma Pvt Ltd, 17, Cowasji Patel Road, *Bombay* 1

326 Diamo Chem Laboratories, B 67 Lokamanya Tilak Road, *Bombay-92*

327 Eupharma Laboratories, 229 30, Hind Rajasthan Industrial Estate, Naigaum Cross Road *Bombay-31*

328 France Italian Co, S V Road, Vile Parle *Bombay-56*

329 Gowdow Chemical and Pharmaceutical Co, 5, Sir Maniklji Road, *Poona-1*

330 Huxley & Co, 25, Dalal Street, *Bombay-1*

331 India Pharma Laboratories 15, Chotani Road Mahim, *Bombay-16*

332 Kembiotic Laboratories, Juhu Parle Development Scheme, 67, Swastic Society, *Bombay-56*

333 Koldex Chemical Co, Plot No 6, Station Road, Goregaon, *Bombay-63*

334 Mehar Pharma, Vikas Estate, Opp. Aarey Road, Goregaon (East), *Bombay-62*

335 Nutri Pharma, 5, Khandubhai Desai Road, Vile Parle (West), *Bombay 62*

336 Pharma Kab Laboratories, Bhaghwat Kirti Mandir, IInd Floor, Morarjee Peth, *Sholapur*

337 Promojohn Pharmaceutical P. Ltd, 340, Girgaum Road, Atmaram Bldg, *Bombay-2*

338 Shalg Pharmaceuticals, R K Industries House, Wallbhat Road, Goregaon East, *Bombay-62*

339 Syrup Thio-Kof Manufacturing Co India, Sharaf Mansion, IInd Floor, Princess Street, *Bombay-2*

340 Theraped Laboratories, 106, Bazar Ward, Kurla, *Bombay-70*

341 Thera Search Laboratories, 4, Nanabhai Lane, *Bombay-1*

342 Vir Pharmaceuticals Ramdas, Bhavan, Shivaji Park Road, No. 3, *Bombay*-28.

343 The Zone Chemical Co., 88-C Prabhadevi Road, *Bombay*-13.

344 Trolan Pharmaceutical Industries, 218, Hind Rajasthan Estate, *Delhi*-14.

345 Pam Laboratories, 350/104, Balram Bhavan, Grant Road, *Bombay*-7.

346 Ramban Patent Depots, 32 Princess Street, *Bombay*-2.

347 Primco Pvt. Ltd., Lamington Chambers, Lamington Road, *Bombay*-4.

348 Romex Pharma, 7, Nabab Bldg., 325, Dr. Navroji Road, *Bombay*-1.

349 Rowti Pharma, 12, Ganesh Peth, Dadar, *Bombay*-28.

350 Ruma Laboratories P. Ltd., 246, Tardeo Road, Karai Estate, *Bombay*-7.

351 Lence Institute of Pharma P. Ltd., 70, Tungway, Sakivihar Road, Andheri East, *Bombay*-57.

352 Magenta Chemicals, 135-36, Paddy Coats, Andheri Kurla Road, *Bombay*-69.

353 Godama Laboratories, Ram Bhag, Ghod Bunder Road, Malad, *Bombay*-64.

354 W. T. Suren & Co. Ltd., Raly House, Raveling Street, *Bombay*-1.

355 Standard Chemical & Pharmaceutical Co., Atlas Mills Compound, Reay Road, *Bombay*-10.

356 Delhi Chemicals & Pharmaceutical Works, Daryaganj, *Delhi*.

@357 Agarwal & Son, Marhatal, *Jabalpur*.

@358 Arvind Chemical Works, Budhapura, *Chhindwara*.

@359 Arun Chemical Industries, 7/49 Chhotapara, *Raipur*.

@360 Amser Pvt. Ltd., 47 Industrial Estate, *Indore*.

@361 Anand Pharmacy, Industrial Cooperative Society Ltd., 159, Tilak Path, *Indore*.

@362 Ashok Thymol Factory, *Indore*.

@363 Alok Lab., Industrial Estate, *Ratlam*.

@364 Anil Pharmaceuticals, 12, Palsikar Colony, *Indore*.

@365 Bharat Pharmaceuticals, 23, Yeshwant Niwas Road, *Indore*.

@366 Bhaijee Pharmaceutical Works, 7, Ram Kishan Ganj, *Khandwa*.

@367 Behari Ayurvedic Pharmacy, 9, Brahmapuri, *Khandwa*.

@368 Binod Mills Co. Ltd., *Ujjain*.

@369 Bairathi Chemical & Pharmaceutical Works, 15 Bairathi Colony, *Indore*.

@370 Boston Industries (India), Station Road, *Bhopal*.

@371 Brite Pharmaceuticals, New Lake View Hotel, *Bhopal*.

@372 Bhagwat Cosmetics Lab., 18/73 Bhagwat Mansion, *Gwalior*-1.

@373 Belu Bell Lab., Narsinghpur Road, *Chhindwara*.

@374 Commercial Paint & Chemical Works, 293, M. G. Road, *Indore*.

@375 C. P. M. Pharmaceuticals Works, Sadar Bazar, *Raipur*.

@376 Cyano Pharma, 9 Palsikar Colony, *Indore*
@377 Chimco Pharma, 12 Arjun Paltan, *Indore*
@378 Castles Chemicals Pharma, Panagar, *Jabalpur*
@379 Chemi Fine, 4 Palas a Street, *Indore*
@380 Curalab Industries, 4 Palasia, *Indore*
@381 Digambar Chemical Works, Ward No 8, Main Road, *Balaghat*
@382 Deepak Chemical & Pharmaceutical Works Station Road, *Durg*, (M P)
@383 Eros Pharma, Mahatma Gandhi Road, *Burhanpur*
@384 Earnest & Co, 302 Usha Nagar Colony, *Indore*
@385 Esper Pharmaceuticals, 158, Palsikar Colony, *Indore*
@386 Eastern Air Product, Govindpura, Industrial Estate, *Bhopal*
*387 Fine Pharmaceuticals, 26 Adarsh Nagar, *Indore*
@388 Gum Corporation Manufacturing Chemists, 111 Victoria Road, (South Civil Lines), *Jabalpur*
@389 Gupta Avuredic Pharmacy, 23, Ganjipura, *Jabalpur*
@390 Ganesh Chikitsa Bhawan, Balarua No 1, *Damoh*
@391 Gupta Chemicals Ratan Bhawan, 7 Simrol Road, *Indore*
@392 Gandhi Jain Karyalaya Jankpura, Dhar Mandhi Road, *Mandsaur.*
@393 Gul Pharmaceuticals, 172 Palsikar Colony *Indore*
@394 Girish Pharmaceuticals, Pendra Road, *Raipur*
@395 Ginichemi Lab, 116, Katra Bazar, *Sagar*
@396 Hambar Pharmacy, 4/36 Manakpura, *Ujjain*
@397 H B Chemical Works, 43 Chhatripura *Indore*
@398 Harda Soap Co. & House Laboratories, 18 Subhash Road, *Harda*
@399 Heavy Electricals (India) Ltd, Oxygen Plant, Piplani, *Bhopal*
@400 H M I & Sons, Phutera Ward 3, *Damoh* (M P)
@401 Impha labs, 71, Palsikar Colony, *Indore*
*402 Indian Pharmaceuticals, 216,Usha Nagar, *Indore*
*403 IBY Pharma, 5 C Rajedera Nagar, *Indore*
@404 I P Pharma, L-B-10, Tilak Nagar, *Indore*
@405 Indian Cosmetics Chemical Industrial Estate, *Raipur*
@406 Imperial Laboratories, Shivaji Nagar, *Indore*
@407 Jainson Chemicals, 59/1, New Dewas Road, *Indore*
@408 Jamsons Laboratories 43, Industrial Estate, *Indore*
@409 Jagat Laboratories, 644, Kotwali, *Jabalpur*
@410 J M Produc s, 13, Subhash Marg, *Indore*
@411 Joy Pharmaceuticals Laboratories, 17 Pagnis Paga, *Indore.*
@412 K L Chaturvedi & Sons, Dayal Bag, *Bilaspur*
@413 Kharia Chemical Works, Narbadaganj, *Mand'la*
@414 Kanak Chemical Works, Rajendra Nagar 58-C, *Indore*
@415 Kamson Lab, Umaria, *Indore*

@416 K. G. & Co., 50, Malipura Road, *Indore.*
@417 Kwality Chemicals, 7/3, New Palasia, *Indore.*
@418 Krishana Ayurvedic, Pharmacy, Bad Bag. *Rewa.*
@419 Krishna Chemico, Rajaswa Gram, *Indore.*
@420 Lala Ramswaroop & Sons, Lordganj, *Jabalpur.*
@421 Lord Chemical Works, 7 Tukoganj. *Indore.*
@422 Lokesh Chemical Works, *Raipur.*
@423 Malwa Chemical Works, 26 Gautampura, *Indore.*
@424 Macon Drug Lab., 217, Jawahar Marg, *Indore.*
@425 Mahendra Pharma, 269, Shri Nagar Extension, *Indore.*
@426 M. K. Industries, 445-46, Kotwali Ward, *Jabalpur.*
@427 Mantri Mantri & Co., 28/29, Industrial Estate, *Indore.*
@428 M. P. Pharma, 22/23 Sajan Nagar, *Indore.*
@429 Malwa Drugs & Chemicals, 10, Udyogpuri, *Ujjain.*
@430 Neochem Laboratories, Berzolius House, *Shivpuri.*
@431 Navshakti Ayurvedalaya, Pvt. Ltd., *Jabalpur.*
*432 Neo Drugs (India), Kalra's Bungalow, Nagpur Road, *Chhindwara.*
@433 Niroga Pharmaceuticals, *Ratlam.*
@434 Oxygen Plant of Hindustan Steel Ltd., *Bhilai.*
@435 Oriental Chemical Works, Opp. Rly. Station, *Indore.*
*436 Plazma Laboratories, 37 Industrial Estate, *Indore.*
@437 Prabhakar Pharma Works, 64, Rajaswa Gram, *Indore.*
@438 Pure Pharma Products (India), 41-44, Industrial Estate, *Indore.*
@439 Patel Bros., Maharani Road, *Indore.*
@440 Roop Trading & Co., 456, Kotwali Ward, *Jabalpur.*
@441 Regal Chemical Works, 11, Palsikar Colony, *Indore.*
@442 Research Laboratories, Jawahar Nagar, *Raipur.*
@443 Rai Zinc Factory, 91, Industrial Estate, *Indore.*
@444 Sambhare Chemical Works, Pandurna. *Chhindwara.*
@445 Seth Mool Chand Nemichand, 16, Ranipura, *Indore.*
@446 Standard Laboratories, 13, Usha Ganj, *Indore.*
*447 Suneeta Laboratories, 89-B/90, Industrial Estate, *Indore.*
@448 Sharma Ayurvedic Pharmacy, Sadar Bazar, *Raipur.*
@449 Sakti Pharmaceuticals, 241, Rajendra Nagar, *Indore.*
@450 Sandeep Laboratories, 495, Gandhi Chowk, *Damoh.*
@451 S. Jain & Sons, 25, Race Course Road, *Indore.*
@452 Sagar Ayurvedashram, Chakraghat Pharmacy, *Sagar.*
@453 Syner Laboratories, 4, Rajaswagram, *Indore.*
@454 Usha Products, Jawahar Nagar, *Raipur.*
@455 Unique Pharma, 2/2, Maharani Road, *Indore.*
@456 Uma Ayurvedic Pharmacy, 79, Sandhya Road, Piparia, Distt. *Hoshangabad.*

@457 Vadnere Chemical Works. 4, Palasia, *Indore*

@458 Victoria Chemical Works 66-67, Ganesh Nagar, *Raipur*,

@459 Venus Laboratories, 27-B, Rajendra Nagar, *Indore*

@460 Vimal Traders, 348, Jawahar Marg, *Indore*

@461 Vostok Laboratories. 16, Rajaswa Gram. *Indore*

@462 Van Pharma, Industrial Estate, *Bilaspur*

@463 Vijaya Chemical Works, 11, Palsikar Colony, *Indore*

@464 Vadson Laboratories, West Phaphadia, *Raipur*

@465 Zodiac Pharma, 16, Maharani Road, *Indore*

@466 Khandelwal Pharmaceuticals 356, Jawahar Marg, *Indore*

@467 State Health Stores, *Patna-7*

@468 Government Vaccines, Inst. Namkum, *Ranchi*-10

@469 S K Show & Bros, Fraser Road, *Patna*-1.

@470 Dabur (Dr. S K Burmah) Pvt Ltd, P O Daburgram, (*S P*).

@471 Runa Chemical, Nayatoal, *Patna*-4

@472 Kunwar Ayurvedic, Hajiganj, *Patna City*

@473 P C Laboratories, Exhibition Road, *Patna*-1

@474 Baranee Coke Co. Ltd, *Kusenda P.O.* (Dhanbad)

@475 Pharma Chem. Laboratories, Abul Aoos Lane, *Patna* 4.

@476 Shree Baidyanath Ayurved Bhavan P Ltd 1, Gupta Lane, *Calcutta*-6

@477 East India Chemical Works (P) Ltd, 248, Maharaja Nand Kumar Road (South) Baranagar, *Calcutta*-36

@478 L Arther Lyon & Co, 2, Clive Ghat Street, *Calcutta*-1

*479 N P Industries, Ruby Park, *P O. Haltu, Dt* 24 *Pargs*, (West Bengal).

@480 Ramkrishna Mission Seva Pratisthan, 99, Sarta Bose Road, *Calcutta*-26

@481 Immuno Biological Laboratories, P-91, Lake Road, *Calcutta*-29.

@482 Pasteur Institute, 2, Convent Lane, *Calcutta*-15

@483 Pharma Remedies Pvt. Ltd, 5/1, Rajchandra Sen Lane, *Calcutta*-9.

@484 Mahesh Laboratories P. Ltd, 30/4, Canal East Road, *Calcutta*-11.

@485 Pearl Chemical Industries, 2, Banamali Chatterjee Street, *Calcutta*-2.

@486 Asiatic Soap Co, 8, Dalhousie Sq. East, *Calcutta*-1.

@487 General Industries Corporation, 11, Rowdon Street, *Calcutta*-16.

@488 G D Pharmaceuticals P. Ltd., Baroline House, 9, Girish Avenue, *Calcutta*-3.

@489 Vax Institute Laboratory Ltd, 13, Krittybash Mukherjee Road, *Calcutta* 4.

@490 New Bengal Drug House, 4, Ramhari Ghosh Lane, *Calcutta*-9

@491 ECZEMA House, 311, Bipin Behari Ganguli Street, *Calcutta*-12.

@492 Chemical Products Corporation, 9-15, Swinhoe Lane, Kashba, *Calcutta* 42

@493 Eastern Drug Co Ltd., 75, Buroshibtala Main Road, *Calcutta*-38.

@494 The Indian Yeast Co Ltd, 4, Bankshall Street, *Calcutta*-1

@495 S. Dhole & Co., 63, Baguiati Road, P.O. Dum Dum, *Calcutta*-28.

@496 Alkaloid Research Laboratories Ltd., 47, Harish Chatterjee Street. *Calcutta*-26.

@497 Ascharya Malam Chemical Works P. Ltd., 40/2, Lakshmi Narain Chakravarti Lane, Kadamtola, *Howrah*.

@498 Martnik Chemicals, 68/4, Pratapaditya Road, *Calcutta*-26.

@499 Bishahari Chemical Works (P) Ltd., 14A, Gora Chand Road, *Calcutta*-14.

@500 C.S.I. (Chemicals & Pharmaceuticals) P. Ltd., 35A, Kailas Bose Street, *Calcutta*-6.

@501 Eastern Pharma Products, 41B, Padda Pukur Road, *Calcutta*-20.

@502 Kediti Prakash P. Ltd., 17, Rai Bahadur Road, *Calcutta*-34.

@503 Kusum Products Ltd., 9, Brabourne Road, *Calcutta*-1.

@504 Oriental Trading Co., 22, Canning Street, *Calcutta*-1.

*505 Penacea Laboratories, 132-1, Beliaghata Road, *Calcutta*-15.

@506 Mangal Stores, 19, Banstolla Lane, *Calcutta*-7.

@507 S. C. Dutt & Co., 6/1, Marcus Square, *Calcutta*-7.

@508 Eastern Research Laboratory, Ghola Road, *P.O. Agarpara*, 24-Parganas (West Bengal).

@509 S. K. Dass, 16-B, Tagore Castle Street, *Calcutta*-6.

@510 Pasteur Laboratories P. Ltd., 2, Bidhan Sarani, *Calcutta*-6.

@511 D. P. Gupta & Sons. 18/3, Dalimtolla Lane, *Calcutta*-6.

@512 Standard Pharma Remedies, 282, Rabindra Sarani. *Calcutta*-5.

@513 Unique Chemical Laboratory P. Ltd.. 2-A, Shib Sankar Mullick Street, *Calcutta*-4.

@514 West Bengal Vaccine Laboratory, Govt. of West Bengal, 2, Convent Lane, *Calcutta*-15.

@515 B. P. Chemical Works, 36, Creek Row, *Calcutta*-14.

@516 Balahari Sardar & Bros., 7, Nalini Sircar Street, *Calcutta*-4.

@517 Govt. Quinine Factory, Govt. of West Bengal, P.O. Mungpoo, Dist. *Darjeeling*.

@518 Sovin Chemicals, Room No. 9, Block 'B', 2nd Floor, 55, Biplabi Rashbehari Basu Road, *Calcutta*-1.

@519 Tibson Pharmaceuticals P. Ltd., 66, Chowringhee Road, *Calcutta*-20.

@520 Hindustan Gas & Industries Ltd., 36, Ganesh Chandra Avenue, *Calcutta*-13.

@521 Apex Products, First Lane, 26, Russa Road East. *Calcutta*-33.

@522 Dist. Blood Bank, Darjeeling, Govt. of West Bengal. Office of the D.M.O., *Darjeeling*.

@523 Basanti Chemical Works & Co., Vill : Gorhbari, P.O. Kajlagarh, Dist. *Midnapur*.

@524 Sankar Medical Stores P. Ltd.,55/100, Biplabi Rash Behari Basu Road, *Calcutta*-1.

@525 Dr. Nag & Sons, 32/1A, Fakir Chand Mitter Street, *Calcutta*-9.

@526 Commercial Enterprises, 71A, Netaji Subhas Road, D/O *Calcutta*-1.

@527 Moti Chemical Industries, 11-D, Balai Mistri Lane, Botanic Garden, *Howrah*

@528 Indian Surgical Emporium, 12, Indra Biswas Road, *Calcutta-37.*

@529 United Laboratories (India) P Ltd 29 Mannapara Road, *Calcutta-50.*

@530 Hindustan Medical Service P Ltd 119 A Bangur Avenue, *Calcutta-28.*

@531 Zenith Laboratory, 4/76, Chanditala Lane, P O Regent Park, *Calcutta-10.*

@532 Dr Bose's Laboratory Ltd 45, Amherst Street, *Calcutta-9*

@533 Dr Paul Lohmann (India) Ltd East Anglia House, 3, Camac Street, *Calcutta-16*

@534 Esco Pharma, 11/1/1A, Nayaratna Lane, *Calcutta-4*

@535 Immuno Chemical Laboratory Ltd 50 Ezra Street, *Calcutta-1.*

@536 Embiar Laboratory Ltd, 13/1B, Balaram Ghose Street, *Calcutta-14*

@537 Blood Laboratory P Ltd 23-A, Eldalia Place, *Calcutta-19*

*538 The Oriental Research & Chemical Lab Ltd, Qumaresh House, Salkia, *Howrah*

@539 Bengal Medical Research, 63 3, Mirzapur Street, *Calcutta-9*

@540 Hindustan Surgical Appliances 29, Huzuri Mull Lane, *Calcutta-14*

@541 Eastern Chemical Laboratory, 1, Kali Dutta Street, *Calcutta-5*

*542 Standard Laboratories P Ltd, 7, Hastings Street, *Calcutta-1.*

@543 Chemical Supplies (Bengal) Co, 10C Gurudas Dutt's Garden Lane, *Calcutta-4*

@544 Sen's Chemical Works P Ltd., 271, Chittaranjan Avenue, *Calcutta-6.*

@545 Monico Laboratory P Ltd, 16/1, Radha Bazar Street, *Calcutta-1.*

@546 The Knox Co, 1, Acharya Jagadish Chandra Bose Road, *Calcutta-20.*

@547 S. Bhattacharyya & Co, 14, Upper Strand Road, Serampore, Dist. *Hooghly*

@548 Chemie-Pharma Industries, 23/1, Guruprasad Chowdhury Lane, *Calcutta 6*

@549 Indian Oxygen Ltd, 5, Mayurbhanj Road, *Calcutta-23*

@550 Arora Pharmaceutical Industries, 44, Ezra Street, *Calcutta-1.*

@551 M. L Burman, 68/D, W C Banerjee Street, *Calcutta-6*

@552 Kaviraj N N Sen & Co P Ltd, 38 & 40, Rabindra Sarani, *Calcutta-1.*

@553 Sadhana Ausadhalaya Dacca (Pharmaceutical Deptt), 56, S K Deb Road, *Calcutta 48*

@554 Luxmi Pharmaceutical Works, P-18, Kanungo Park, Garia 24-Parganas, *Calcutta*

@555 Hooghly Chemical Industries P Ltd, P O Duilaya Via Andul-Mouri, Dist *Howrah*

@556 Frank Ross & Co Ltd, Metropolitan Insurance Building, 7, Chowringhee, *Calcutta-13*

@557 Jokhu Lall Shaw, 153, Upper Chitpur Road, *Calcutta-5*

@558 L M Saha Sankhanidhi & Co P Ltd, 32E, Jackson Lane, *Calcutta-1.*

@559 DABUR (Dr S K Burman) P Ltd, 142, Rash Behari Avenue, *Calcutta-29*

@560 Everest Pharmaceuticals P. Ltd., 71, Indra Biswas Road, *Calcutta*-37.

@561 Anakem Laboratories P. Ltd., 68/2, Sikdarbagan Street, *Calcutta*-4.

@562 Chemotherapeutic Laboratories, 13A, Mahendra Bose Lane, *Calcutta*-3.

@563 Chandra Mohan Saha & Co., Prachin Mayapur Road, P.O. Nabadwip, Dist. *Nadia*.

@564 S. S. Research Laboratory, Katadanga Road, P.O. Kakinara, 24, *Parganas*. (W.B.)

@565 Bio-Drug Laboratories P. Ltd., 348, Maharaja Nanda Kumar Road, *Calcutta*-2.

@566 Standard Chemicals Corporation, Barrakpore Road, P.O. Noapara (Barasat), 24-*Parganas*. (W.B.)

@567 Life Pharmaceuticals P. Ltd., P-11, Kanungo Parke, Block 'A' Garia, 24-*Parganas*. (W.B.)

@568 Vaccine Institute Corporation of Calcutta, 36, Ballygunge Circular Road, *Calcutta*-19.

@569 Universal Drug House P. Ltd., 10, Braunfeld Row, *Calcutta*-27.

@570 Tropzon Pharma-Chem, 42, Russa Road, South (1st Lane), *Calcutta*-33.

@571 The Bengal Health & Chemical Work Ltd., Agarpara, 24-*Parganas* (W.B.)

@572 Burma-Shell Oil Storage & Distributing Co. of India Ltd., Hongkong House, 31, Dalhousie Sqr., *Calcutta*-1.

@573 Alphine Industries, 892, Joshi Path, D.B. Gupta Road, *New Delhi*-5.

@574 Dipon Laboratory, R-19, Darga Road, *Calcutta*-17.

@575 Tropical Pharmaceutic Works, Ramrajatala, Santragachi, *Howrah*.

@576 Hindustan Lever Ltd., 63, Garden Reach, *Calcutta*-24.

@577 Oriental Chemical Works P. Ltd., 1/IB, Govinda Addy Road, *Calcutta*-27.

@578 S A. B. Bakshi & Co., 32, Collootola Street, *Calcutta*-1.

@@579 B. R. & Sons, *Delhi*-8.

@580 Calcutta National Chemical Industries, 21, Bhattacharyya Para Lane, Baranagar, *Calcutta*-36.

@581 The Moriengers Chemical Laboratory, 83A, Bahirsura Road, *Calcutta*-10.

@582 ADERBINE, 1, Fordyce Lane, *Calcutta*-14.

@583 Lucky Chemical Works, 3, Masjid Bari Street, *Calcutta*-6.

@584 Calcutta Surgical Cotton Co., 115, Canning Street, *Calcutta*-1.

@585 United Chemical Industries, 136, Maharaja Nanda Kumar Road, *Calcutta*-36.

@586 Pest Control Corporation, 47, Bentinck Street, *Calcutta*-1.

@587 Krystal Chemicals P. Ltd., 9-15, Swinhoe Lane, *Calcutta*-42.

@588 N. I. Pharmaceutical Works P. Ltd., P-291, C.I.T. Road, *Calcutta*-10.

@589 Waldies Zinc Pigments Ltd., Gillander House, 8, Netaji Subhas. Road, *Calcutta*-1.

@590 The Pharmed Research Laboratory, 39/6, Feeder Road, Belgharia, *Calcutta*-56.

@591 Joy Industries, 11/2, Old China Bazar Street, *Calcutta*-1
@592 The Knox Co , 1, Acharya Jagadish Chandra Bose Road, *Calcutta* 20
@593 Union Drug Co Ltd , 182, Rai Bahadur Road, Behala, *Calcutta* 34
@594 Hindusthan Steel Ltd , P O Durgapur-3, *Dist Burdwan*
@595 Commonwealth Trading Corpn (P) Ltd , 9, Clive Row, *Calcutta*-1.
@596 Bio Pharma Laboratories, 28/9, Library Road, *Calcutta* 26
@597 Government Fish Technological Station, Junput, Contai (Dt. Midnapore)
@598 C I Laboratories, 121/5 D, Mahohar Pukur Road, *Calcutta* 26
@599 West Bengal Vaccine Institute, 2, Convent Lane, *Calcutta*-15
@600 Lily Products Corporation, F14/7, Model Town, *Delhi* 9
*601 Bhatnagars & Co (P) Ltd , 7/26, Darya Ganj *Delhi*
@602 Popular Dressing Industries, 44, Mall Road, Kingsway Camp, *Delhi* 9
@603 Dr Mullesh and Sons, 990, Bazar Sita Ram, *Delhi* 6
@604 Hamdard (WAKF) Laboratories, Lal Kuan *Delhi*-6
@605 Jhones & Wexoes (India) Regd , 1/2, Lady Hardinge Road, *New Delhi*
@606 Indian Oxygen Ltd , 66 Najafgarh Road, Industrial Area *New Delhi* 15
@607 Arora & Co , Rajouri Garden, *New Delhi* 23
@608 American Surgico Corporation, 17, Beadon Pura Karol Bagh, *New Delhi* 5
@609 Pharma Surgicals, 16, School Lane, Babar Road, *Delhi* 1
@610 Blood Bank Organization, 4, Pusa Road *New Delhi*

## II GOVERNMENT DEPARTMENTS

(a) *General Government Departments*

*1 The Drugs Controller (India), Nirman Bhavan, *New Delhi*
*2 The Director General of Technical Development, Udyog Bhavan, *New Delhi*
*3 The Development Commissioner of Small Scale Industries, Udyog Bhavan, *New Delhi*
*4 The Ministry of Commerce, *New Delhi*.
*5 The Ministry of Health & Family Planning, *New Delhi*
*6 The Ministry of Petroleum & Chemicals, *New Delhi*
*7 The Ministry of Defence, Directorate General of Armed Forces DHQ PO, *New Delhi* 11.
*8 The Planning Commission, *New Delhi*
*9 The Director General of Supplies & Disposals, Parliament Street, *New Delhi*
*10 The Collector of General Excise, New Central Excise Building, Queen's Road, *Bombay*-1
11 The Collector of Customs, *Madras*
12 The Collector of Customs, *Bombay*
13 The Collector of Customs, *Calcutta*
14 The Collector of Customs, *Cochin*

V. DEALERS/DISTRIBUTORS

1 Biological & Chemical Agency, Pan Bazar, *Gauhati*
2 Drugs India, 15 Lamb Road *Gauhati*
3 Andhra Mercantile Agency, C 1-77, Chapel Road, Gun Foundry, *Hyderabad*
*4 Royal Medical Hall, Jawaharlal Road, Afzal Gunj, *Hyderabad*
5 Pilepu & Co , 11 25-213, Main Bazar, *Vijayawada*
6 Badridas Kidarnath Khanna & Co , Amira Kadal 1st Bridge, *Srinagar*
7 United Importers (Bombay) Pvt Ltd., 12329, Cannon Shed Road, *Ernakulam*
8 Bora & Co , 712, Shukrawar Peth, *Poona* 2
9 Agrawal Agencies, Hanuman Road, Sita Building, *Nagpur*
10 N Chimanlal & Co , Shroff Mansion, 36, Princess Street, *Bombay*-2.
*11 Bhagwan Das & Co , P O Box 1166, *Delhi* 6
*12 S V Rangaswamy & Co , Pvt Ltd No 75, Kalasipalayam New Extension, *Bangalore* 2
13 Pure Farma Distributors, 82, Jayachamarajendra Road, *Bangalore*-2.
14 Sri Ram Pharmacy, Car Street, *Mangalore*-1
15 Key Lall & Co , Pokhardas Building, Nicholsan *Ambala Cantt*
16 B A Brothers (Bombay) P Ltd , 98, Princess Street, *Bombay* 2
17 Sahib Singh (Agencies) Pvt Ltd , 14-A, Asaf Ali Road *New Delhi*
18 Bhagwan Das & Co , Station Road, *Jaipur*
19 Medicine Traders, Bullion Building, Johari Bazar, *Jaipur*
@20 C J Shah & Co , Sankar Chambers, Mirzapur Road, *Ahmedabad*
21 Drogaria Saleet, *Margao* (Goa)
22 United Friends, Dayaton Sahi *Cuttack* 1
23 English & Co , Chemists & Druggists P O Box 52, *Alleppy* (Kerala State)
24 Central Pharmacy, Chemists Kallai Road *Calicut* (Kerala State).
25 Brodway Medical Stores Chemists & Druggists *Ernakulam* (Kerala State)
26 C Kanniah Naidu & Sons, Chemists & Druggists, *Quilon* (Kerala State)
27 City Medical Stores Chemists, *Trichur* (Kerala State)
28 Kerala Drug House, Chemists, *Trivandrum* (Kerala State)
29 G Pappiah Naidu & Sons, 68, Big Chetty Street, *P. O Chingleput* (Madras State)
30 Kasinath & Co Chemists & Druggists, 638, Big Bazar Street *Coimbatore* (Madras State)
31 A S. V Naygar & Sons 114 Nainiappa Naick Street *Madras*-3.
32 Ashok Pharmacy, 540-541, Pyerofts Road, *Madras*-3
33 Kumar Medicals, Town Hall Road, *Madhurai* (Madras State).

## V. DEALERS/DISTRIBUTORS

1 Biological & Chemical Agency, Pan Bazar, *Gauhati*

2 Drugs India, 15, Lamb Road *Gauhati*

3 Andhra Mercantile Agency, C 1-77, Chapel Road, Gun Foundry, *Hyderabad*

*4 Royal Medical Hall, Jawaharlal Road, Afzal Gunj, *Hyderabad*

5 Pilepu & Co, 11 25-213, Main Bazar, *Vijayawada*

6 Badridas Kidarnath Khanna & Co, Amira Kadal 1st Bridge, *Srinagar*

7 United Importers (Bombay) Pvt. Ltd., 12329, Cannon Shed Road, *Ernakulam*

8 Bora & Co, 712, Shukrawar Peth, *Poona* 2

9 Agrawal Agencies, Hanuman Road, Sita Building, *Nagpur*

10 N Chimanlal & Co, Shroff Mansion 36, Princess Street, *Bombay*-2.

*11 Bhagwan Das & Co, P O Box 1166, *Delhi* 6

*12 S V Rangaswamy & Co, Pvt Ltd, No 75 Kalasipalayam New Extension, *Bangalore* 2

13 Pure Farma Distributors, 82, Jayachamarajendra Road, *Bangalore*-2.

14 Sri Ram Pharmacy, Car Street, *Mangalore*-1

15 Key Lall & Co, Pokhardas Building, Nicholsan *Ambala Cantt*

16 B A Brothers (Bombay) P Ltd, 98, Princess Street *Bombay* 2

17 Sahib Singh (Agencies) Pvt Ltd, 14-A, Asaf Ali Road, *New Delhi*

18 Bhagwan Das & Co, Station Road, *Jaipur*

19 Medicine Traders, Bullion Building, Johari Bazar, *Jaipur*

@20 C J Shah & Co, Sankar Chambers, Mirzapur Road, *Ahmedabad*

21 Drogaria Saleet, *Margao* (Goa)

22 United Friends, Dayaton Sahi *Cuttack* 1

23 English & Co, Chemists & Druggists P O Box 52 *Alleppy* (Kerala State)

24 Central Pharmacy, Chemists Kallai Road *Calicut* (Kerala State).

25 Brodway Medical Stores Chemists & Druggists, *Ernakulam* (Kerala State)

26 C Kanniah Naidu & Sons, Chemists & Druggists, *Quilon* (Kerala State)

27 City Medical Stores Chemists, *Trichur* (Kerala State)

28 Kerala Drug House, Chemists, *Trivandrum* (Kerala State)

29 G Pappiah Naidu & Sons, 68, Big Chetty Street, *P. O Chingleput* (Madras State)

30 Kasinath & Co. Chemists & Druggists, 638, Big Bazar Street, *Coimbatore* (Madras State)

31 A S. V Naygar & Sons 114 Naimiappa Naick Street, *Madras*-3.

32 Ashok Pharmacy, 540-541, Pyerofts Road, *Madras*-3

33 Kumar Medicals, Town Hall Road, *Madhurai* (Madras State).

34 Ooty Drug Stores & Pharmacy, Main Bazar, *Ootacamund* (Dt. Nilgiris, Madras State).

35 Meenakshi Medicals, 115-A, First Agraharam. *Salem*-1 (Madras State).

36 Drugs & Chemicals P. Ltd., 15, Big Street, *Kumbakonam* (Madras State).

37 D. S. Abraham & Co., 149, High Road, *Tinnevelly* (Madras State)

38 Murugan Medical Stores, Big Bazar Street, *Trichinopoly*-8 (Madras State).

39 Raja Medical Corporation, 6 & 7, Singarathope. *Tiruchirapalle*-8 (Madras State).

40 Ananda Emporum, General Merchants, 82, Duplex Street, *Pondicherry*.

41 Maffatlal & Co., Old Taragul Pet. *Bangalore*-2 (Mysore State).

42 V. L. Nathan & Co., Chemists & Druggists, Quadrant Road. *Bangalore Cantt*-1 (Mysore State).

43 United Store, Ramdeo Galli, *Belgaum* (Mysore State).

44 Dwarakanath Medical Sotres, Car Street *Bellary* (Mysore State).

45 Karnatak Pharmacy, Broadway, *Dharwar* (Mysore State).

46 Gopal Medical Stores, Sayaji Road, *Mysore*-1.

47 Totgars' Co-operative Sale Society Medical Stores Ltd., *Sirsi* (Dt. North Kanara), Mysore State.

48 Canara Medical Suppliers (P) Ltd., *Mangalore*-1 (Mysore State).

49 D. Rajaravatnam Chetty, *Chittoor* (Andhra Pradesh).

50 Krishna Medical Sotres, Chemists & Druggists. Main Road. *Rajahmundry* (Andhra Pradesh).

51 Ganesh Medical Hall, Sultan Bazar, *Hyderabad* (Andhra Pradesh).

52 Vijaya Medical Hall, Abid Road, *Hyderabad* (Andhra Pradesh).

53 Arvind Medical Stores, Park Road, *Vijayawada*-1 (Andhra Pradesh).

54 Samadhan Medical Stores, *Nalgonda* (Andhra Pradesh).

*55 Ganapathy Medical Stores, Chemists & Druggists. Trunk Road, *Nellore (A.P.)*.

56 Vizag Medical Stores, Chemists & Druggists, Main Road. *Vizagapatnam* (Andhra Pradesh).

57 Srinivas Medical & Fancy Mart, Main Road, *Warangal* (Andhra Pradesh).

58 Akberally Ebrahimji, Behramji Mansion, Sir P. M. Road, *Bombay*-1.

59 B. Jayantilal & Co., 15, Mangaldas Road, *Bombay*-2.

60 D. Tatilal & Co., Princess Street Next to Lloyds Bank, *Bombay*-2.

61 Kundan Medical Stores, Juhu Road, Santa Cruz (West), *Bombay*-54.

62 The National General Stores, Ghodbunder Road, Malad (West), *Bombay*-64.

63 Gobind Medical Stores, Camp No. 2, *Kalyan* (Maharashtra).

64 Nava Bharat Medical Stores, Jawahar Road, *Amravati* (Maharashtra).

65 D Popular Pharmacy, Chemists & Druggists, Old Palace Road, *Kolahpur* (Maharashtra)

66 Maya Medical Stores, Gandhibag *Nagpur* 2 (Maharashtra)

67 Hiralal Mehta & Co, Chemists & Druggists 920, Sadhashiv, Laxmi Road, *Poona* 2

68 The Co-operative Medical Stores, Datta Chowk, *Sholapur* (Maharashtra)

69 A B C Surgical & Medical Stores, Gandhi Road, *Ahmedabad*

70 Royal Chemists, Ellis Bridge, *Ahmedabad*-6

71 Central Medical Stores, Chokhandi *Baroda* (Gujarat State)

72 Shantilal Maganlal Shah, Shroff Mansion Dt & P O *Bulsar* (Gujarat. State)

73 Mahavir Medical Stores, Rajendra Road, *Jamnagar* (Gujarat State).

74 Tilak Store, Bhavsarval *Nadiad* (Dt Kaira Gujarat)

75 Ratilal Lallubhai & Brothers Sir Lakhajiraj Road, *Rajkot* (Gujarat)

76 C N Brothers Chemists & Druggists Limda Chowk *Surat* (Gujarat).

77 Melaram Brothers, Chemists Gole Bazar *Bilaspur* (Madhya Pradesh).

78 Gwalior Medical Store Bada, *Gwalior* (Madhya Pradesh)

79 Khunneylal Parasam, Kotwali Bazar, *Jabalpur* (Madhya Pradesh).

80 C P Medical Stores, Sardar Bazar *Raipur* (Madhya Pradesh).

81 Deepchand Medical Stores, Katra Bazar, *Saugar* (Madhya Pradesh).

82 National Medical Hall Ebrahimpura, *Bhopal* (Madhya Pradesh)

83 National Pharmacy, Ebrahimpura *Bhopal* (Madhya Pradesh)

84 Kumar Medical Stores, Fountain, *Agra* (Uttar Pradesh).

85 Medico Chemists, *Aligarh* (Uttar Pradesh)

86 Jhajee & Sons, Chemists & Druggists Chowk *Allahabad* (Uttar Pradesh).

87 Rama Medical Stores, Leader Road *Allahabad* (Uttar Pradesh).

88 K B Bass & Co, Bara Bazar, *Bareilly City* (Uttar Pradesh)

89 Premi Medicine Co., Pucca Bazar, *Basti* (Uttar Pradesh)

90 R B. Hamer & Co. Astley Hall, *Dehra Dun* (Uttar Pradesh)

91 Bajrang Aushadi Bhandar, Main Bazar *Gorakhpur* (Uttar Pradesh).

92 Bombay Medical Stores, Birhana Road *Kanpur* (Uttar Pradesh).

93 Allied Drug & Chemical Co, Aminabad *Lucknow* (Uttar Pradesh).

94 Amir Singh Narula, New Gate *Ghaziabad* (Uttar Pradesh)

95 Radhey Shyam & Sons, Chowk *Varanasi* (Uttar Pradesh)

96 Anand Medical Stores, Sector 19 C *Chandigarh* (Punjab).

97 Bedi Sons, *Chandigarh* (Punjab)

98 Narang Medical Hall Chemists & Druggists, Nicholson Road *Ambala Cantt* (Punjab).

99 Bishambar Lall & Co, Katrasher Singh *Amritsar* (Punjab)

100 Friends Medical Hall, Rampur Phool, *Bhatinda* (Punjab).

101 National Medical Hall, Opp Nagori Gate, *Hissar* (Punjab)

102 Himalaya Medical Stores, Railway Road, *Hoshiarpur* (Punjab).
103 Janatha Medical Stores, G. T. Road, *Jullunder* (Punjab).
104 Bhagat Singh & Sons, Chemists, Pindi Street *Ludhiana* (Punjab).
105 Balwant Singh & Sons, Sirhindi Bazar, *Patiala* (Punjab).
106 Rohtak Medical Hall, Railway Station Road, *Rohtak* (Punjab).
107 Jammu Medical Stores, Raghunath Bazar, *Jammu* (Jammu & Kashmir).
108 K. L. Dhar & Sons, Dal Gate, *Srinagar* (Jammu & Kashmir).
109 Harishchander Medical Stores, Mortndalee Bridge, *Ajmer* (Rajasthan).
110 G. G. Bhargawa & Bros., Chemists & Druggists, *Alwar* (Rajasthan).
111 Associated Agencies, Haldionka Rasta, *Jaipur* (Ratasthan).
112 Loung Medical Stores, Ghantagarh, *Jodhpur* (Rajasthan).
113 National Medical Agencies, Chemists & Druggists, Surajpole, *Udaipur* (Rajasthan).
114 Sripati Charan Sadhu & Sons, Ranigunj Bazar, *Burdwan* (West Bengal).
115 East End Medical Hall, 170, Baithakhana Road, Bow Bazar, *Calcutta*.
116 Anup Traders, 431, Somwar Peth, *Poona*-11.
117 Ganesh Agencies, Sultan Bazar, *Hyderabad*.
118 A. G. Stores, 100, T. H. Road, *Madras*-21.
119 Kemi-kos Traders, 105/146, Chaman Ganj, *Kanpur*.
@120 Alembic Distributors, Ltd., Laxmi Bldg., Sir P. M. Road, *Bombay*-1.
*121 Sivaram & Swamy, 3/153, Broadway, *Madras*-1.
122 Unique Surgical Works, Exhibition Road, *Patna*-1.
123 Voltas Ltd. (Pharmaceutical Division), Graham Road, Ballard Estate, *Bombay*-1.
124 Anand Medicine Co., 79 & 80, Colootola Street, *Calcutta*.
125 National Pharmacy, Bhagirath Palace, Chandni Chowk, Post Box No. 1004, *Delhi*.
*126 Victoria Medical Hall, 20, Upper Circular Road, *Calcutta*-9.
@127 R. V. Seth & Co., Mehta Bldg., 55, Canning Street, Room No. 69. (3rd Floor), *Calcutta*-1.
*128 Hiron Pharmacy, Kali Bari Road, Siliguri, Darjeeling, *West Bengal*.
129 Niramaya, Municipal Road, Midnapore, *West Bengal*.
130 Laxmi Medical Hall, M. P. Dwivedi Road, Bhagalpur, *Bihar*.
131 Nathubhai Patel & Co., Makhaniakuan, Patna-4, *Bihar*.
132 T. M. Enterprisers, Cantt. Road, *Cuttack*-1 (Orissa).
133 Ramkanai Stores, *Agartala* (Tripura).
134 Hemant Pharmacy, Fancy Bazar, *Gauhati* (Assam).
135 Inland Enterprisers, Akhtokia Road, *Gauhati* (*Assam*).
136 All India Sales Agencies, 24, Jawahar Marg, *Indore City*.
137 Daruvala, Bros. Pvt. Ltd., 40, Princess, Street, *Bombay*-2.
@138 Kanchanlal Vadilal & Co., 41-43, Mangaldas Road, P. B. No. 2223, *Bombay*-2.

139 Khatau Vallabhadas & Co, India Globe Chambers, Fort Street, *Bombay*-1.

*140 Bharat Drug House, Devkaran Mansion, 20, Mangaldas Road, P B. No 2570, *Bombay*-2

*141 B A. Brothers (Eastern) P. Ltd, 6, Clive Road, P O Box 2809, *Calcutta*-1.

@142 A. K Dutta & Co Ltd, 115, Canning Street, P B 2482, *Calcutta*

@143 Suhrid Geigy Trading Ltd, Express Bldg, 14, 'E' Road, *Bombay*-1.

144 Wootam Pharmacy, Baidyanath *Post Deoghar*

*145 Babubhai & Sons, 98, Princess Street, Mansoor Bldg, *Bombay*-2

VI CONSUMERS : (HOSPITALS)

*1 Superintendent, J J Group of Hospitals, *Bombay*-1

2 Dean, K. E M Hospital, Parel, *Bombay*

3 Medical Officer in-charge, Cama & Albless Hospitals, *Bombay*

*4 Superintendent, St George's Hospitals, Frere Road, *Bombay*

*5 Superintendent, Gokuldas Tejpal Hospital, Carnac Road, *Bombay*.

*6 Dean, Sassoon Hospital, *Poona*-1

*7 Secretary, Medical College Hospitals, 88, College Street, *Calcutta*.

8 Presidency General Hospital, 244, Lower Circular Road, *Calcutta*.

*9 Superintendent, Government General Hospital, *Madras*

10 Seth Vadilal Sarabhai General Hospital, and Seth Chinai Maternity Home, Ellis Bridge, *Ahmedabad*

11 The Civil Surgeon, *Sholapur*

12 The Civil Surgeon, *Surat*

13 The Medical Superintendent, Ishwari Memorial Hospital, *Banaras*

14 The Civil Surgeon, *Ballia*

15 The Director General of Armed Forces (Medical Services), *New Delhi*

16 The Superintendent, Kamla Nehru Memorial Hospital, *Allahabad* (Uttar Pradesh)

*17 The Superintendent, Mahatma Gandhi Memorial Hospital, Parel, *Bombay*

18 The Superintendent, Tilak Memorial Hospital, Sion, *Bombay*-22.

19 The Superintendent, Bombay Hospital, Near Liberty Cinema, *Bombay*

20 The Superintendent, Wellingdon Hospital, *New Delhi*

*21 The Superintendent, Irwin Hospital, *New Delhi*

22 The Superintendent, Safdarganj Hospital, *New Delhi*

*23 The Surgeon General with the Government of Maharashtra, Contractor Building, Ballard Estate, *Bombay*-1

24 The Superintendent, Government General Hospital *Bangalore*

25 The Superintendent, Government General Hospital, *Patna*

26 The Superintendent, Government General Hospital, *Trivandrum*.

27 The Superintendent, Government General Hospital, *Bhopal*

28 The Superintendent, Government General Hospital, *Chandigarh.*

29 The Superintendent, Government General Hospital, *Lucknow.*

*30 The Superintendent, Government General Hospital, *Jaipur.*

31 Director General of Supplies & Disposals, N. I. Building, Parliament Street, *New Delhi.*

32 The Director, Central Government Health Scheme, Wellingdon Hospital, *New Delhi.*

33 The Superintendent, Government General Hospital, *Calcutta.*

*34 The Regional Director, Employees State Insurance Scheme, ESIC. Building, Near Strand Cinema, *Bombay*-5.

35 The Dean, Grant Medical College, *Bombay.*

*36 The Dean, B. J. Medical College, *Poona.*

37 The Dean, Medical College, *Nagpur.*

*38 The Dean, Medical College, *Aurangabad.*

39 The Dean, Medical College, *Miraj.*

40 The Civil Surgeon, Vithal Sayanna General Hospital, *Thana.*

41 The Civil Suregon, General Hospital, *Ratnagiri.*

42 The Civil Surgeon, General Hospital, Kolaba, *Alibag.*

*43 The Civil Surgeon, *Jalgaon.*

44 The Civil Surgeon, General Hospital, *Dhulia.*

*45 The Civil Surgeon, Harris General Hospital, *Nasik.*

46 The Medical Officer, In-charge, Cottage Hospital, *Dahanu.*

47 The Medical Officer, In-charge, Cottage Hospital, Mangaon, Distt. *Kolaba.*

48 The Medical Officer-in-Charge, Cottage Hospital, Kalwan, Dist. *Nasik.*

*49 The Medical Officer-in-charge, Cottage Hospital, Chopda Dist. *Jalgaon.*

*50 The Medical Officer in-charge, Central Hospital, Sub-Township No. 3, Ulhasnagar, Dist. *Thana.*

*51 The Civil Surgeon, Ripon General Hospital,, Ahmednagar.

52 The Civil Surgeon, General Hospital, *Sholapur.*

*53 The Civil Surgeon, General Hospital, *Sangli.*

54 The Civil Surgeon, General Hospital, *Satara.*

55 The Civil Surgeon, C. P. R. General Hospital, *Kolhapur.*

56 The Superintendent, Hospital for Diseases of Chest, Aundh Camp, *Poona.*

57 The Medical Officer in-charge, Services Hospital, *Kolhapur.*

58 The Civil Surgeon, *Nagpur.*

59 The Superintendent, Mayo General Hospital, *Nagpur.*

60 The Medical Superintendent, Daga Memorial Hospital, *Nagpur.*

61 The Dean, Medical College Hospital, *Nagpur.*

62 The Medical Superintendent, Mental Hospital, *Nagpur.*

63 The Civil Surgeon, King Edward Memorial Hospital, *Wardha.*

64 The Civil Surgeon, General Hospital, *Chanda*

65 The Civil Surgeon, Dist. Hospital *Amravati*

66 The Medical Superintendent, Dufferin Hospital, *Amravati*

67 The Civil Surgeon, Dist Hospital *Yeotmal*

68 The Civil Surgeon, General Hospital, *Bhandara*

*69 The Civil Surgeon, Dist Hospital, *Bhir*

70 The Civil Surgeon, District Hospital, *Parbhani*

71 The Civil Surgeon, General Hospital, *Parbhani*

72 The Civil Surgeon, General Hospital, *Nanded*

73 The Civil Surgeon, General Hospital, *Osmanabad*

*74 The Medical Officer in-charge, T B Clinic Sassoon General Hospital, *Poona.*

75 The Medical Officeer In-charge, T B Clinic, *Sholapur*

76 The Medical Officer In-charge, T B Clinic, *Akola*

77 The Medical Officer In-charge, T B Clinic, *Chanda.*

78 The Medical Officer In-charge, T B Clinic, *Wardha*

79 The Medical Officer In-charge, T B Clinic, *Nagpur*

80 The Medical Officer In-charge, T B Clinic, General Hospital, *Nagpur*

*81 The Medical Officer In-charge, T B Clinic, *Parbhani*

82 The Medical Officer In-charge T B Clinic, *Latur*

83 The Medical Officer In-charge, T B Clinic, *Jalna*

84 The Medical Officer In-charge, T B Clinic, *Aurangabad.*

85 The Medical Officer In-charge, T B Clinic, *Nandea*

86 The Medical Officer In-charge, Cottage Hospital, *Jawahar*

87 The Medical Offioer In-charge, Cottage Hospital, Sawantwadi Dist *Ratnagiri*

88 Director of Medical Services, Government of Andhra Pradesh, *Hyderabad*

89 Director of Health Services, Government of Assam, *Shillong*

*90 Director of Health Services, Government of Bihar, *Patna.*

91 Director of Health & Medical Services Government of Gujarat, *Ahmedabad*

92 Director of Health Services, Government of Kerala, *Trivandrum*

93 Director of Health Services, Government of Madhya Pradesh, *Bhopal.*

94 Director of Medical Services, Government of Madras, *Madras*

*95 Director of Medical Services, Government of Mysore, *Bangalore*

96 Director of Health Services, Government of Orissa, *Bhubaneswar.*

97 Director of Health Services, Government of Punjab, *Chandigarh*

*98 Director of Health Services, Government of Rajasthan, *Jaipur*

99 Director of Medical & Pulbic Health Dept , Government of Uttar Pradesh, *Lucknow*

100 Director of Health Services, Government of West Bengal, *Calcutta.*

101 Director of Medical Services, Himachal Pradesh, *Simla.*

102 Superintendent, Medical Services, *Delhi*

103 Director of Health Services, Government of Jammu & Kashmir, *Srinagar.*

*104 Government Royapettah Hospital, *Madras*-14.

*105 The Administrative Medical Officer, Employees State Insurance Scheme, "Gamco House" Tulsi Pipe Road, Dadar, *Bomby*-28.

*106 The Superintendent, Central Mental Hospital, *Yeravada.*

## VII. RAW MATERIALS MANUFACTURERS

*1 National Organic Chemical Industries Ltd., Mafatlal House, Backbay Reclamation, *Bombay*-1.

*2 Herdilla Chemicals Ltd., United India Buildings, Sir, P. M. Road *Bombay*-1.

*3 Hindustan Organic Chemicals Ltd., Harchandrai House, Queen's Road, *Bombay*-2.

*4 Union Carbide India Ltd., Braborne Road, P. B. No. 2170, *Calcutta.*

*5 Indian Organic Chemicals, 28 Apollo Street, *Bombay*-1.

*6 Indian Drugs & Parmaceuticals Ltd., N. I. Building, 5, Parliament Street, *New Delhi.*

*7 Cibatul Ltd., *Bulsar.*

8 Durgapur Chemicals Ltd., 10, Middleton Row, *Calcutta*-16.

*9 Atul Drug House, 85, Dr. Annie Besant Road, Worli, *Bombay*-18.

*10 Fertilizer Corporation of India Ltd., F-43 South Extension Area Part-1, Ring Road, *New Delhi*-3.

*11 Hindustan Steel Ltd., *Ranchi.*

*12 Capsulation Services P. Ltd., Bank of Baroda Bldg., Apollo Street, *Bombay*-1.

13 Pharmaceutical Capsules Laboratories, Mehta House, Apollo Street, *Bombay*-1.

14 Seraikella Glass Works P. Ltd., P. O. Bandra, S. E. Railway, Dist. *Singhbhum.*

## VIII. ASSOCIATIONS

### (a) **Producers Associations**

*1 Organisation of Pharmaceutical Producers of India, Cooks Bldg., D. N. Road, *Bombay*-1.

*2 Indian Chemical Manufacturers' Association, India Exhange Place *Calcutta*-1.

*3 The Indian Drug Manufacturers' Association, P.O. Box 7396, *Bombay*-58.

4 The Pharmaceutical and Allied Manufacturers and Distributors Association Ltd., P. O. Box 473, *Bombay*-1.

5 All India Manufacturers' Organisation, Jeevan Sahakar, P. M. Road *Bombay*-1.

(b) **Labour Organisations**

6 All India Trade Union Congress

7 Indian National Trade Union Congress

8 Hind Mazdoor Sabha

(c) **Other Associations**

*9 Indian Medical Association, 16, Hajiali Park, Clerk Road, *Bombay*-34

*10 Punjab Pharmacists Federation, Pindi Street, *Ludhiana*

*11 Indian Pharmaceutical Association, Kalina, Santacruz (East), *Bombay*-29

12 Bengal Chemists & Druggists Association, 10, Bonfield Lane, *Calcutta* 1

13 The Consumers' Association of India, Kashmere Gate, *Delhi*-6

14 Poona Chemists & Druggists Association, 90 Budhwar Peth, *Poona* 2

15 The Retail & Dispensing Chemists, Association, Nazir Building, Calicut Street, *Bombay*-1

*IX OTHERS

Major Gen S S Sockey, *Council of Scientific and Industrial Research*, *New Delhi*

## APPENDIX II

[*Vide* Paragraph 3.1]

**Statement showing the extent of response received to the Commissions questionniares/Letters**

| Sl. No. | Parties addressed | Number addressed | Number replied |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| I | Manufacturers of basic drugs : | | |
| | (a) Large scale units . . . . . . | 34 | 34 |
| | (b) Small scale units . . . . . . | 11 | 11 |
| II | Prospective manufacturers of basic drugs : | | |
| | (a) Large scale units . . . . . . | 10 | 10 |
| | (b) Small scale units . . . . . . | 5 | 5 |
| III | Formulators : | | |
| | (a) Large scale units . . . . . . | 108 | 85 |
| | (b) Medium and small scale units . . | 612 | 463 |
| IV | Government Departments : | | |
| | (a) Central Government Departments . . | 18 | 14 |
| | (b) State Drugs Controllers . . . . . | 17 | 16 |
| | (c) Embassies abroad . . . . . . | 11 | 9 |
| V | Dealers/Distributors . . . . . . | 147 | 11 |
| VI | Consumers (Hospitals) . . . . . . | 106 | 28 |
| VII | Raw material manufacturers . . . . . | 14 | 11 |
| VIII | Associations : | | |
| | (a) Producers' Associations . . . . . | 5 | 3 |
| | (b) Labour Associations . . . . . | 3 | Nil |
| | (c) Other Associations . . . . . . | 7 | 3 |
| IX | Others . . . . . . . . | 1 | 1 |

## APPENDIX III

[*Vide* Paragraph 3.5]

### List of factories visited by the Commission and Officers

| Sl No | Name of the factory/unit visited | By whom visited | Date of visit |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| | *(A) Visited by the Commission* | | |
| 1 | Alembic Chemicals Works Limited, Baroda | Shri M Zaheer, Chairman | 1 9 6 |
| 2 | Bio-chemical & Synthetic Products Ltd, Hyderabad | Prof K T Merchant Member | 24 5 6 |
| 3 | Biological Evans Ltd, Hyderabad | Do | 25 5-6 |
| 4 | Boehringer Knoll Ltd, Bombay | Do | 20 3 6 |
| 5 | Boots Pure Drug Co ((India) Ltd, Bombay | Shri M Zaheer, Chairman | 18 3 6 |
| 6 | CIBA Research Centre, Goregaon, Bombay | Do | 22 3 6 |
| | | Prof K T Merchant, Member | |
| | | Shri S Subramanian, Member | |
| | | Dr P V Gunishastri, Secretary, | |
| 7 | Glaxo Laboratories (India) Pvt Ltd, Bombay | Shri M Zaheer, Chairman | 20-3 6 |
| 8 | Gurco Pharma Pvt Ltd, New Delhi | Do | 7-7-6 |
| 9 | Indian Drugs & Pharmcaeuticals Ltd Hyderabad | Prof K T Merchant, Member | 24 5 6 |
| 10 | May & Baker Ltd, Bombay | Do | 18 3 6 |
| 11 | Merck, Sharp & Dohme India, Pvt. Ltd, Bombay | Shri S Subramanian Member | 18 3 ( |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 12 | Hoechst Pharmaceuticals Ltd., Bombay. | Shri M. Zaheer, Chairman.<br>Prof. K. T. Merchant, Member.<br>Shri S. Subramanian, Member. | 9-5-68 |
| 13 | Ranbaxy Laboratories Ltd., New Delhi. | Shri M. Zaheer, Chairman. | 7-7-67 |
| 14 | Roche Products Ltd., Bombay . | Shri S. Subramanian, Member. | 20-3-68 |
| 15 | Sarabhai Chemicals, Baroda . | Shri M. Zaheer, Chairman. | 1-9-67 |
| 16 | Sarabhai Merck Ltd., Baroda . | Do. | 1-9-67 |
| 17 | Synbiotics Ltd., Baroda . . | Do. | 1-9-67 |
| | (B) *Visited by Officers* | | |
| 1 | Alembic Chemical Works, Co. Ltd., Baroda. | Shri A. K. Ganguli, Asst. Costs Accounts Officer (A.C.A.O.) | 8-1-68 |
| 2 | Alliance Trading Corporation (P) Ltd., Calcutta. | Shri Gopalakrishnan, A.C.A.O. | Jan. 68 |
| 3 | Bengal Chemical & Pharmaceutical Works Ltd., Calcutta. | Shri R. Viswanathan, A.C.A.O. | 24-11-67 |
| 4 | Bengal Immunity Co. Ltd., Calcutta. | Shri Gopalakrishnan, A.C.A.O. | Jan. 68 |
| 5 | Biochemical & Synthetic Products Ltd., Hyderabad | Shri A. K. Ganguli, A.C.A.O. | 7-9-67 to 13-9-67 |
| 6 | Biological Evans Ltd., Hyderabad | Do. | Do. |
| 7 | Boehriger-Knoll Ltd., Bombay . | Shri M. V. Ratnam, Cost Accounsts Officer, (C.A.O.) | Dec., 67 |
| 8 | Boots Pure Drug Co. (India) Ltd., Bombay. | Shri A. K. Ganguli, A.C.A.O. | During the months of August and Sept 1967. |
| 8(a) | Hoechst Pharmaceuticals Ltd., Bombay. | Shri M. V. Ratnam, C.A.O. | Dec., 67 |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 9 | Cadila Laboratories, Ahmedabad | Shri A K Ganguli, A C A O | 14th Oct. 1967. |
| 10 | Chemical Industrial & Pharmaceutical Works, Ltd, Bombay | Do | Do |
| 11 | Cyanamid India, Ltd, Bulsar | Do | 16-7-67 & 17-7-67 |
| 12 | Dey's Medical Stores (Mfg) Pvt Ltd, Calcutta | Shri R Viswanathan, A C A O | 24th Nov. 1967 to 14th Dec, 1967 |
| 13 | East India Pharmaceuticals Works Ltd, Calcutta | Do | Do |
| 14 | Glaxo Laboratories Bombay | Shri M V Ratnam, C A O | Dec, 67 |
| 15 | Gujarat Pharmaceutical & Chemical Works, Ahmedabad | Shri A K Ganguli, A C A O | 14th Oct, 1967 |
| 16 | Gurco Pharma (P) Ltd, Delhi | Shri M V Ratnam, C A O | Dec, 67 |
| 17 | Haffkine Institute, Bombay | Shri A K Ganguli, A C.A O | During the months of August and Sept 1967. |
| 18 | Hindustan Antibiotics Ltd, Poona | Do | 19-7-67 to 22-7-67 |
| 20 | Khandelwal Laboratories, Bombay | Do | During the months of August and Sept 1967 and 8th, 9th and 29th Nov, 67 |
| 21 | Martin & Harris (P) Ltd, Calcutta | Shri Gopalakrishnan, A C.A O | Jan, 68 |
| 22 | May & Baker Ltd, Bombay | Shri M V Ratnam, C A O | Dec, 67 |
| 23 | Merck Sharp & Dohme of India Ltd, Bombay | Shri B R Ganapathy, C.A O | Nov, 67 |

| 1 | 2 | 3 | 4 |
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| 24 | Neogy Laboratories, Calcutta . | Shri R. Viswanathan, A.C.A.O. | 24th Nov. 1967 to 14th Dec., 1967, |
| 25 | Oriental Pharmaceutical Industries Ltd., Bombay. | Shri A. K. Ganguli, A.C.A.O. | During the months of August and Sept. 1967. |
| 26 | Parke Davis (India) Ltd., Bombay. | Shri B. R. Ganapathy, C.A.O. | |
| 27 | Pfizer Ltd., Bombay . . . | Do. | Nov., 67 |
| 28 | Roche Products Ltd., Bombay . | Do. | Nov., 67 |
| 29 | Sarabhai Chemicals, Baroda . | Shri A. K. Ganguli, A.C.A.O. | 8th Jan. 1968 to 13th Jan. 1968. |
| 30 | Sarabhai Merck Ltd., Baroda . | Do. | Do. |
| 31 | Suneeta Laboratories, Indore . | Do. | 22-9-67 to 25-9-67 |
| 32 | Synbiotics Ltd., Baroda . . | Do. | 8th Jan. 1968 to 13th Jan. 1968. |
| 33 | Unichem Laboratories, Bombay . | Do. | During the months of August and Sept. 1967. |
| 34 | Wander Pharmed Ltd., Bombay | Do. | Do. |
| 35 | Wyeth Laboratories, Ltd., Bombay. | Shri M. V. Ratnam, C.A.O. | Nov., 67 |
| 36 | Zandu Pharmaceuticals, Bombay. | Shri A. K. Ganguli, A.C.A.O. | 7-9-67 to 13-9-67. |

## APPENDIX IV

(*Vide* Paragraph 3·6)

### List of persons who attended the public inquiry on 28th February, 1968

| Sl. No. | Name of the person | | |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| | A *PRODUCERS* | | |
| 1 | Shri B. D Patel . | Representing | Alembic Chemical Works Ltd , Alembic Road, Baroda-3 |
| 2 | ,, J K. Gupta Roy . | ,, | Bengal Chemical & Pharmaceutical Works Ltd., 164, Maniktala Main Road, Calcutta-54 |
| 3 | ,, R P. De . . | ,, | Bengal Immunity Co Ltd , Immunity House, 153 Dharmatala Street, Calcutta-13. |
| 4 | Dr D A Padwal . | ,, | Biological Evans Ltd , 18/1 & 3, Azamabad, Hyderabad-20 |
| 5 | Shri R. V. Rao . . | ,, | Biochemical & Synthetic *Products* Ltd , Sanatnagar Hyderabad |
| 6 | ,, G M Ponappa . | ,, | Boots Pure Drug Co (India) Ltd , 17, Nicol Road, Bombay-1. |
| 7 | ,, A. K. Bahl . . | ,, | Boehringer-Knoll Ltd , United India Bldg. P Mehta-Road, Bombay-1 |
| 8 | ,, S Mitra | ,, | Cyanamid India Ltd , 254-D2, Dr Annie Besant Road, P O Box 6577, Worli, Bombay-18. |
| 9 | ,, N M Palekar | | |
| 10 | ,, Parmal Bardhan . | ,, | East India Pharmaceutical Works, 102, Syamaprasad Mukherjee Road, Calcutta-26 |

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|---|---|---|---|
| 11 | Shri M. Ramaswamy | . . Representing | Hindustan Antibiotics Ltd., Pimpri, Poona. |
| 12 | ,, G. A. Subramanyam | | |
| 13 | ,, V. Bhushan . | ,, | Hoechst Phramaceuticals Ltd., Dugal House, Backbay Reclamation, Bombay-1. |
| 14 | ,, Mr. H. B. Richens | | Merck Sharp & Dohme. of India Ltd., Dugal House, Backbay Reclamation, Bombay-1. |
| 15 | ,, S. P. Dadachanji . | ,, | |
| 16 | ,, D. Macmaster . | | |
| 17 | Shri T.P. Chatterjee . | ,, | Parke Davis (India) Ltd., Kurla Andheri Road, Saki Naka, Bombay-70. |
| 18 | ,, S. V. Pillai . . | ,, | Pfizer Ltd., ICICI Building, 163, Backbay Reclamation, Bombay-1. |
| 19 | ,, R. W. Leybourne Calaghan. | ,, | Roche Products Ltd., 28, Tardeo Road, Bombay-34. |
| 20 | ,, R.B.Contractor . | ,, | Sarabhai Merck Ltd., P. B. No. 80, Wadi Wadi, Baroda. |
| 21 | ,, M. S. Sastry . | ,, | Synbiotics Ltd., P. Box No. 129, Wadi Wadi, Baroda. |
| 22 | ,, M. Navaskar . | ,, | Wander Pharmed Ltd., 33.A New Marine Lines, Bom-, bay-1. |
| 23 | ,, T. L. Kripalani . | ,, | Wyeth Laboratories Ltd.. Steelcrete House, Dinsha Vachha Road, P.O. Box No. 1423, Bombay-1. |
| 24 | ,, I. A. Modi . . | ,, | Cadila Laboratories. Ghodsar, Maninagar, Ahmedabad-8. |
| 25 | ,, B. K. Bhar . . | ,, | Dey's Medical Stores (Mf.) Pvt. Ltd., 6-D, Lindsey St. Calcutta-16. |
| 26 | ,, B. S. Giri . | ,, | Khandelwal Laboratories, 79/87, Kala Chowki Road, Post Box No. 7808, Bombay-33. |
| 26(a) | ,, Ram Goppal Gupta | | |

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|---|---|---|---|
| 27 | Shri H C Kumar | Representing | Martin & Harris Pvt Ltd, 182 Acharya Jagadish Chandra Bose Road, Calcutta 14 |
| 28 | ,, S Ramanathan | ,, | Sarabhai Chemicals, Post Box No 31, Wadi Wadi Baroda |
| 29 | ,, L N Godbole | ,, | Unichem Laboratories Ltd, 4, 5, 6, Jogeshwari Estate, Bombay 60. |
| 30 | ,, J K Sheth | ,, | Zandu Pharmaceutical Works Ltd Gokhale Road South, Bombay 28 |
| 31 | ,, G M Parikh | | |
| 32 | ,, G Mukherjee | ,, | Neogy Laboratories, 205, Netaji Subhas Road, Behala, Calcutta 34 |
| 33 | ,, P V Gidwani | ,, | Suneeta Laboratories, 89B/90, Industrial Estate, Pologround, Indore, M P. |
| 34 | ,, J S Khambata | ,, | Glaxo Laboratories (India) Pvt Ltd, Dr Annie Besant Road, Worli, Bombay-18 |
| 35 | ,, P K Godbole | ,, | Haffkine Institute, Parel, Bombay 12 |
| 36 | ,, P K Sholapurwallah | | |
| 37 | Dr I K Kakker | ,, | Indian Drugs & Pharmaceuticals Ltd, National Insurance Building 5, Parliament St, New Delhi |
| 38 | ,, I K Bahl | | |
| 39 | Shri C N Chari | | |
| 40 | ,, R Lal | | |
| 41 | ,, V Varadarajan | | |
| 42 | ,, N Sankaran | | |
| | *ASSOCIATIONS* | | |
| 43 | Mr Keith C Roy | ,, | Organisation of Pharmaceutical Producers of India, Cook's Building, Dr D N Road, Bombay 1 |
| 44 | Dr R N Majumdar | | |
| 45 | ,, J N Banerjee | | |
| 46 | Shri J N Chaudhry | | |
| 47 | Mr I Mackinnon | | |
| 48 | Shri K J Divatia | | |

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| 49 | Shri V. N. Shah . . | Representing | Indian Drug Manufacturers Association, P. O. Box 7396, 185-191, Jaya Prakash Road, Bombay-58. |
| 50 | Dr. Y. K. Hameid . | | |
| 51 | Shri G. P. Nair . . | | |
| 52 | Dr. K. M. Parikh . | | |
| 53 | Shri A. M. Gadgil . | ,, | Indian Chemical Manufacturer Association, India Exchange, India Exchange Place, Calcutta. |
| 54 | ,, K. N. Deodhar . | ,, | Poona Chemists & Druggists Association, 90, Budhwar Peth, Poona-2. |
| 55 | ,, M. S. Rao . . | | |
| 56 | ,, P. R. Shah . . | ,, | All India Federation of Chemists and Druggists, Block No. 3, Devkaran Mansion, 43, Princess, St., Bombay-2. |
| 57 | ,, N. J. Bole . . | | |
| 58 | ,, D. V. Gandhi . | ,, | Chemists & Druggists Association Bombay, Block No. 3, Devkaran Mansion, 43, Princess St., Bombay-2. |
| | ,, L. M. Shah . | | |
| 59 | Dr. R. V. Sathe . . | ,, | Indian Medical Association, Shri Nivas, Sardar Vallabhbhai Patel Road, Bombay-4. |
| 60 | ,, C. L. Jhaveri . | | |
| 61 | ,, M. A. Panwala . | | |
| | *DEALERS :* | | |
| 62 | Shri K. V. Shah . . | ,, | Kanchanlal Vadilal & Co., 41/43, Mangaldas Road, P. B. No. 2223, Bombay-2. |
| 63 | ,, P. B. Oza . . . | ,, | B. A. Brothers (Bombay) P. Ltd., 98, Princess Street, P. B. No. 2077, Bombay-2. |
| 64 | ,, G. Dorai . . . | ,, | Voltas Ltd., Marketing Dvn. 19, Graham Road, Ballard Estate, Bombay-1. |

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| | *HOSPITALS :* | | |
| 65 | Dr (Smt) Santofkar . | Representing | K E. M Hospital, Parel, Bombay. |
| 66 | ,, B. B Gaitonde . | ,, | J. J Group of Hospitals, Bombay-1 |
| | *RAW MATERIALS :* | | |
| 67 | Shri I M Mehta | ,, | Union Carbide India Ltd, 1 Middleton Street, Calcutta-16 |
| 68 | ,, N M Mehta . | ,, | Atul Drug House Ltd 36, Dr Annie Besant Road, Worli Bombay-18. |
| 69 | ,, T R P Raman | ,, | National Organic Chemical Industries Ltd, Sandoz House, Dr Annie Besant Road Worli, Bombay |
| 70 | ,, S S Ahluwalia | | |
| 71 | ,, B Singh | ,, | Hindustan Organic Chemicals Ltd P O. Rasayani, Kolaba |
| 72 | ,, K K Jose | | |
| 73 | ,, M Karani | ,, | Suhrid Geigy, Wadi Wadi, Baroda |
| | *CENTRAL GOVERNMENT :* | | |
| 74 | Shri L V Dharmadhikari | ,, | Director General of Supplies and Disposals, N I C Building, Parliament Street, New Delhi 1 |
| 75 | ,, V K Swamy | ,, | Collector of Customs New Customs House, Ballard Estate, Bombay-1 |
| 76 | ,, V. N Kullarwar | ,, | Cental Excise, New Central Excise Building, P Box No 806, Maharshi Karve Road, Bombay-1. |
| 77 | ,, S Sundararajan | ,, | Ministry of Petroleum & Chemicals, North Block, New Delhi |

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| 78 | *Shri N.M. Saklani* . | *Representing* | *State Trading Corporation of* India Ltd., Indian Express Building, Mathura Road, New Delhi. |
| 79 | Dr. S. K. Guha . . | ,, | The Asstt. Director General of Health Services, Medical Store Depot., Bellasis Road, Bombay-8. |
| 80 | Shri Joga Rao . . | ,, | Controller General of Patents, Designs & Trade Marks, Bombay-1. |
| 81 | Dr. Nityanand . . | ,, | Central Drug Research Institute, Chattar Mansil Palace, Lucknow. |
| | *STATE GOVERNMENTS :* | | |
| 82 | Shri M. K. Rangnekar | ,, | Directorate of Drugs Control, Govt. of Maharashtra, 127, M.G. Road, Bombay-1. |
| 83 | ,, V. C. Sane . . | | |
| 84 | ,, P. S. Joshi . . | | |
| 85 | ,, S. M. Shah . . | ,, | Drugs Controller, Government of Gujarat, Laldarwaja, Ahmedabad-1. |
| 86 | ,, A. C. Sengupta . | ,, | Drugs Controller, Govt. of West Bengal, College Square West, Calcutta-7. |
| 87 | ,, C. V. Narasimhan | ,, | Drugs Controller, Government of Madras, Madras-6. |
| | *OBSERVERS :* | | |
| 88 | Shri G. Narayanan . | ,, | I.C.I.C.I., Bombay-1. |
| 89 | ,, R. Nanabhoy . | ,, | Nanabhoy & Co., Bombay. |
| 90 | ,, Natvar Dhruv . | ,, | Economic Times, Bombay. |
| 91 | ,, K. S. S. Raghavan | ,, | Chemical Weekly, Bombay. |
| 92 | ,, D. P. Sharma . | ,, | 'Capital', Calcutta. |
| 93 | ,, R. Chandrasekhar | ,, | The Financial Express. |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 94 | Shri H D. Bhutt. | Representing | 'Vyapar', Bombay. |
| 95 | ,, P. L Mathai | ,, | Share-holders' representative. |
| | *ASSESSORS* : | | |
| | Shri S. K. Borkar | ,, | Drugs Controller, Govt of India, New Delhi |
| | Dr. B Shah | ,, | Industrial Adviser, Directorate General of Technical Development, New Delhi. |
| | Dr K Ganapathy | ,, | Director, Regional Research Laboratory (CSIR), JAMMU-TAWI |
| | Dr S S Gothoskar | ,, | Dy Drugs Controller, Govt. of India, Western Region, Bombay |

(The representatives of the All India Retail Chemists Association met the Commission separately on 27th May 1968.)

## APPENDIX V-A

(*Vide* paragraph 5.2.5)

### Recommendations of the Pharmaceutical Enquiry Committee (1954)

(1) **Licensing.**—Licence under the Industries (Development and Regulation) Act should be granted subject to the factory obtaining a licence under the Drugs and Cosmetics Act. There should be co-ordination between licensing under the Drugs and Cosmetics Act and licensing under the Industries (D and R) Act.

A large number of firms should not be permitted to carryout almost identical type of work without due regard to the requirements of the country or the existing capacity.

It would be economical to extend the activities of the penicillin factory at Pimpri to include the production of synthetic antimalrials, sulpha drugs, other chemotherapeutic products and vitamins. This would also help to establish a centre for the manufacture of several essential chemicals at one place.

Firms not having processing departments of their own but getting such work done at others' factories should be given permission to put their own departments for the purpose, provided that some of the drugs are of an essential nature and they undertake to produce these, starting from basic chemicals and/or intermediates as near to the basic chemicals as possible, within a reasonable time.

The small scale manufacturers should be induced to get together, and by polling their resources, put up properly equipped co-operative units. In the alternative, each small scale manufacturer should try to specialise in a particular type of product, after properly equipping himself for its manufacture instead of all of them trying to make a number of products without proper equipment supervision and control.

(2) **Policy towards foreign firm in India.**—New foreign concerns should not be permitted to set up factories, unless they undertake to manufacture products that have not been manufactured in adequate quantities by other factories, starting from basis chemicals and/or intermediates as near to the basic chemicals as possible, within a reasonable time.

Firms with 100 per cent foreign capital the so-called "India Ltd."—and branches of foreign firms should not be permitted to be established except under special circumstances for the manufacture of basic chemicals and drugs, which the Indian managed factories are not able to take up. The desirability of insisting on participation of Indian capital in cases where the manufacturing process is completed might be considered with a provision for repatriation of foreign capital from the sixth to the fifteenth year thereafter.

(3) **Collaboration with foreign firms.**—Tie-ups with foreign firms including participation in capital should be preferred to "tie-ups" with no foreign participation in capital. In the pharmaceutical industry however foreign capital participation should not generally exceed 49 per cent.

For foreign collaboration, preference should be given only to products manufactured wholly in India from indigenous basic raw materials and/or intermediates nearer to the basis chemicals or with imported basic chemicals and/or intermediates nearer to the basic chemicals

Arrangement made by certain manufacturers, whether Indian or foreign forbiding the selling of bulk chemicals to other producers based on agreements entered into with foreign firms should be discouraged

The existing collaboration agreements should be revised at the earliest opportunity and the future collaboration with foreign firms should be allowed by Government to firms in India on the basis of the following guiding principles .—

(i) Foreign collaboration should not be entertained in respect of items like cosmetics, tooth pastes, etc ,

(ii) Permission may be granted for the compounding of selected drugs on the basis of essentiality, provided the firm agrees to complete its programme of manufacture of basic drugs within a specified period ;

(iii) Foreign collaboration should be allowed only when a firm is agreeable to commence with the manufacture of at least a few basic drugs from primary raw materials ,

(iv) The scheme of licensing should be so evolved as not to give monopoly to any one firm but keep competition alive In approving schemes for the manufacture of basic drugs, care should, however, be taken to see that the production of the same drug is not taken up by too many firms.

**(4) Basic drugs production and co-operation between the drugs** [illegible]

[illegible]

[illegible] co operation between the two sections of the industry and, wherever required, even sponsor the manufacture of fine chemicals and drugs to bring about a co-ordinated development of the industry.

**(5) Imports, Exports and Customs duties.**—In such cases, where imports of finished products like synthetic drugs, antibiotics, vitamins and hormones have to be maintained in view of their importance [illegible] the practice of modern medicine, such imports should be gradually reduced and the existing processing capacity of the country shoud be utilised fully by importing them in bulk and processing them until their production develops in the country

Imports of vitamin preparations under the O.G.L. should be stopped and put on a separate quota basis which should be gradually reduced as the indigenous production increases. Only the import of vitamins in bulk should be allowed on the O.G.L. till such time as their manufacture develops in the country.

Dumping of foreign quinine into the country should be prevented and customs duties should be imposed on synthetic antimalarial and foreign quinine.

Assistance should be given in the form of reduction, remission or rebate of import duties on raw materials and intermediates required by the industry. The rebate or reduction scould be so adjust as to amount to a total incidence which would be less than the duty levird on the finished products.

Consistent with meeting local demand, foreign markets should be expanded foi pharmaceutical preparations by permitting their liberal exports and including them while negotiating trade agreements.

(6) **Sales Selling Systems, Selling Prices and Margins.**—Commercial methods af marketing the different products of the factory should be adopted. The product should be advertised in Indian and forign scientific and Trade Journals, for developing wider markets and thus ensure its economic production.

Arrangements made by certain manufacturers, whether Indian or foreign forbiding the selling of bulk chemicals to other producers based on agreements entered into with foreign firms should be discouraged.

The practice of making available the vaccines and sera made by Government institutions, only to Government hospitals should be revised and the products made available to the general public through the retail trade by adopting commercial methods of marketing.

Certain manufacturers and importers supply drugs and pharmaceuticals direct to the hospitals in consumer packs at prices lower by as much as 15 per cent than the prices to the trade. Such supplies may have a way of finding themselves into the open market and disrupt the trade. Concessional rates to hospitals should be given for special hospital packs only and not for supplies made in the ordinary packs. As far as possible, even supplies to the hospital should be made through recognised trade channels.

While arriving at the consumer's price, the discount to the trade should be fixed at a reasonable figures of say 25 per cent of price at which the goods are sold to the trade namely, the retailer or wholesaler, with an extra 1½ to 2 per cent to cover packing, etc.

The general wholesaler should sell at a price which gives him profit of 10 per cent and pass on the balance to the retailer.

(7) **Quality.**—The quality of crude drugs used as raw materials should be ensured. To improve the qulity of the crude drugs available in the market dealers of such drugs and their premises should be licensed and limited to those who are in a position to guarantee their quality to the manufacturers and exporters.

The equipment and staff employed by the firms should be scrutinised and wherever the required minimum enquipment and staff do not exist, the licence under the Drugs. and Cosmetics Act should be withdrawn.

A group of firms may be encouraged to join together and put up well-equipped testing laboratories for keeping a control on their raw materials and finished products

(8) **Research.**—Research in pharmacology in this country is lagging behind chemical research and this is one of the reasons which prevents the development of chemical research in the field of drug industry Adequate personnel *equipment and finances for research work in medical colleges should* be provided for research in pharmacology

A *well-equipped research laboratory, and a pilot plant should be set up for* [illegible]

A *research unit and a pilot plant should be provided in the Hindustan* Antib otics Ltd , to carry out investigations on the production of new type of insecticides and conduct experiments on their production

[illegible] in [illegible] stry [illegible] ould not become [illegible]

The manufacturing operations should be divided into two categories (1) [illegible]

Essential—Not exceeding 5 per cent, Not essential—Not exceeding 2 per cent

Payment of rates of royalty for "pure know how' as agreed by some firms is excessive and this should be reduced to reasonable figure, when current agreements come up for revision

*Generally speking agreements should be revised every five years,* although in special cases, Government may permit agreement for a longer period initially

(10) **Raw materials.**—The difficulty likely to be experienced by firms in [illegible]

*Government themselves should take up the manufacture of essential* coal-tar products if sufficient response from the private sector is not forthcoming

Government should take immediate steps to organise the cultivation of medicinal plants in a scientific manner and sponsor agencies for their proper collection, storage and marketing

Modern slaughter houses with facilities for proper collection and storage of glands and organs should be established to start with, in cities such as Bombay, Madras, Calcutta and Delhi. Collection and preservation of those glands and organs should be supervised by qualified personnel and not left to the butchers.

To enable the pharmaceutical manufacturers to adopt more automatic filling and sealing, the production of machinemade tubing and ampoules should be expended. Production of neutral glass tubing and its use in ampoule making should be encouraged.

Standards for the quality of the glass and/or alternative containers required for different purposes should be drawn up with the help of the Central Glass and Ceramic Institute and the Indian Standards Institution.

The pharmaceutical concerns and pharmacies while indenting their requirements of glass containers from glass manufacturers, should insist on standard specifications and decline to purchase cheap goods that do not conform to them.

11) **Administration of Drugs and Cosmetics Act.**—*To overcome* the defects in the operation of the drugs control and to bring about a uniformity in the Standard of products manufactured, the administration of Drugs Control should be centralised by bringing the control on manufacture, sale and distribution (exercised by the State Drug Controllers) under the Drugs Controller (India).

Rule 109 (1)(a) relating to labelling, applicable to Schedule C drugs should be made applicable to all drugs and rigidly enforced. It should apply, in addition, to the labels, on the containers, to advertisement in Medical, Scientific and Trade Journals and the literature distributed to the medical profession and chemists and druggists.

The existing laboratory facilities for testing samples of drugs are inadequate in all the States. In every State or group of small States a well-equipped independent laboratory should be set up which should not form an appendege to any of the existing Public Health, Food or Chemical Laboratories.

## APPENDIX V-B

[*Vide* paragraph 5 3 2]

**Recommendations of the Drugs and Equipment Standards Committee (1965)**

**[illegible] and sub-standard drugs.**—Central Intelligence [illegible]

[illegible] n 50 to 100 per [illegible] The Drugs Ins-pectors may be empowered also to [illegible] and also make [illegible] powers may not be [illegible]

[illegible] Calcutta, [illegible]

**Self-sufficiency.**—Where licensed units in the large scale sector had not been able to implement the phased programme of production their licences may be cancelled.

High priority for the production of raw materials and intermediates should be given and the achievement of self sufficiency in these and other essential drugs should be arrived at A portion of the basic drugs must compulsorily be sold and handed over to the formulators even if the basic drug manufacturer *is also a formulator Costs should be pre-determined by Government and the* rates should be maintained If necessary occasion examination of the costs may be made by Government

**Legislation.**—The opium and the Dangerous Drugs Act may be consoli-[illegible] 1954 and the relevant [illegible] the Drugs Act, [illegible] *Excise Duties) Act* [illegible] licinal and Toilet [illegible] potable purposes, [illegible]

APPENDIX V-C

[*Vide* paragraph 5.3.3]

## Important findings and Recommendations of the West Bengal Drugs Enquiry Commission (1964)

(1) Supply of raw materials from indigenous sources should be developed.

(2) Indigenous manufacture of plants and equipments should be encouraged by the State with foreign collaboration, if necessary.

(3) The Government should improve following conditions which created difficulties to the manufacturers : (a) varying and inadequate pressure of the city's gas supply ; (b) fluctuation voltage in the city's electric supply ; (c) high maintenance cost of airconditioning; (d) unavailability of refrigerant; (e) transport difficulties ; and (f) inclusion of basic raw materials in item 28 of Tariff Schedule which made prices high.

(4) The State Government should create a cadre of scientific personnel and adequate testing facilities to enable the State Drug Control Laboratories to test drugs to ensure quality control.

(5) The State Drug Control Laboratory should be an independent unit. The existing state of affairs of the laboratory should be enquired into by Government.

(6) The State Drug Control Administration should be under a full-time Drug Controller, assisted by Assistant Controller, Senior Inspectors and Junior Inspectors, who should be adequate in number.

(7) Malpractice in sale was due sometimes to artificial shortage created by stockists and this should be controlled by strict enforement of the provisions of the West Bengal Drug Control Act, 1950.

(8) Tapper-proof seals, with the manufacturers name and name of drug in the case of capsules will prevent misuse. The standards for packing of drugs should be specified immediately. There should be statutory compulsion on perforation of strips separating individual tablets.

(9) In the case of all chemists and durggists snops, the minimum standards requires under the Drugs and Cosmetics Act and Rules should be strictly enforced without exception.

(10) The present Drugs and Cosmetics Act should be further amended for (a) simplification of the definition of the term 'drug'; (b) re-definining the terms "Misbranded", "Spurious", "Substandard" and "Adulterated" in relation to drugs ; (c) substituting I. P. for B.P. or B.P.C. in Entry 4 of the Schedule to the Act; and (d) omitting Schedule F.

(11) Life-saving drugs, not manufactured in the country, should be freely imported by Government.

## APPENDIX V-D

[*Vide* paragraph 5 3 4]

**Important Recommendations of the Committee on Drugs Control (1966)**

(1) *Formulations*

(a) Multiplicity of formulations should be checked and prevented by requiring prior approval of the formula

(b) National Formula of India should be uniformly adopted throughout the country.

(c) Irrational formulations of vitamins should be stopped and their stability ensured before being allowed to market them

(d) The generic name should precede the proprietary name and necessary provisions be made in the Drugs and Cosmatics Rules

(2) *Licensing system of sales*

(a) No new Schedule C manufacturing units should be licensed without associating an officer of the Central Drug Control Organisation in the inspection of such premises

(b) Sale licences should be automatically renewed on the lines of Radio licences

(c) Licensing system of sales licenses should be rationalised

(d) Wholesale and retail trade should be separated, except Sale by wholesale by one retailer to another retailer

(e) Inspection fees should be laid down for non-schedule C and C(1) products There should be only one licence for both Biological and Non-biological products License system should be rationalised and made very rigid

(3) *Amendments to Drugs and Cosmetics Act and Rules*

(a) Definition of the term "Drug" should be enlarged so as to include substances such as components of drugs

(b) Schedules G H, and L of the Drugs and Cosmetics Rules should be recast

(c) Sulpha drugs should be reclassified based on safety margins

(4) *Drugs Control Administration*

(a) State Governments should be asked to appoint fulltime Inspectors

(b) Zonal organisations of the Central Drugs Control organisation should be set up immediately

(c) Manufacturers indulging in fake records should be eliminated by joint inspection of State and Central authorities

(5) *Production of Pharmaceutical Equipment*

(a) Encouragement should be given to the manufacture of glass lined and high vacuum equipment including other Pharmaceutical equipment.

# APPENDIX V-E

[*Vide* paragraph 5.3.5]

## Recommendations of the earlier Committees on testing of drugs and Drugs Acts as Endorsed by the Mukhopadhay Committee (1966)

(1) A high degree of priority should be given to the setting up of State Analytical Laboratories in order that the tone of Drugs Standard Control may be raised quickly. Central Government should extend financial assistance to the State for this purpose.

(2) National sampling programme should be drawn up for testing of drugs.

(3) Prescription form should be standardised.

(4) The question of laying down standards for packing and containers should be referred to the Indian Pharmacopoiea Committee.

(5) The National Formulary of India should be uniformally adopted throughout the country. As an immediate measure Government Departments should as far as possible purchase only such drugs as are included in the National Formulary of India. Government (both Central and State) should also examine the question of disallowing reimbursement of the cost of drugs not included in the National Formulary of India. The Committee was of the considered view that in order to save the Nation's Drugs Bill and to conserve its resources it would be necessary to so regulate the Drug industry as to permit manufacture of only such drugs as are included in the National Formularly of India. It would also be desirable to market such drugs only under their Pharmacopoeial or Formularly names. The National Formulary of India should be kept up to date.

(6) The Drugs and Cosmetics Act which is operative in all the States except the State of Jammu & Kashmir should be extended to the State of Jammu & Kashmir in the interest of uniform enforcement of legislation throughout the country.

(7) The codification of the Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954, the Drugs and Cosmetics Act, 1940 and the Poisons Act. 1919 is a feasible proposition and should be attempted.

(8) The provisions of the Drugs and Magic Remedies (Objectionable Advertisements) Act should be amended to control advertisements by quacks on their promises.

(9) The Opium Act and the Dangerous Drugs Act might be consolidated into a single Act.

(10) The enforcements of the Medicinal and Toilet preparations (Excise Duties) Act should continue to remain with the Excise authorities as heretofore.

(11) The Pharmacy Act would aim at regulating the education and profession of pharmacists should be left as an independent statute.

## APPENDIX V-T

(*Vide* paragraph 5 3 7)

**Important Recommendations of the Indian Pharmaceutical Delegation (1964)**

(2) The installation of multi purpose plants has special significant for India and they should be encouraged

(3) Each factory should maintain liberal stocks of spares and replacements of essential items such as glass and glass lined equipment instruments etc

(4) It is desirable for industrial units in India to set up pilot plants so as to enable them to evaluate the processes developed in their own laboratories as well as those emanating from other research institutes

(5) The Government also should encourage setting up of pilot plant facilities by consulting organisations so as to enable them to undertake development work on behalf of the industry particularly to assist those units that do not have such facilities

(6) Very close liaison between the engineering industries and the pharmaceutical manufacturers should be energetically developed

(7) The importance and essentiality of product development laboratories should be better appreciated by the Indian Industry Even medium and small firms should fruitfully organize development laboratories and build up *their own engineering facilities*

(8) Close collaboration between the Atomic Energy Authorities and the pharmaceutical Industry in India should be promoted

(10) The Drug Control administrations in various States should insist upon adequate staff and equipment for quality control being provided before granting manufacturing licences

(11) To prevent some of the abuses observed during recent years in the working of the patent system, the law should be amended substantially as recommended in the Ayyengar Committee Report

(12) The establishment of major projects in the public sector for essential drugs will also provide salutary effect on the price levels.

(13) Price regulation may be done by negotiation with the manufacturer on the lines obtaining in U K

(14) Foreign firms requiring Indian raw materials may be encouraged to set up processing plants in India for the purpose of converting these raw materials into semi finished concentrates or finished basic drugs etc suitable for export.

## APPENDIX V-G

[*Vide* paragraph 5.3.9]

**Important Recommendations Made so Far by the Committee on Essential Drugs (1966)**

(a) Topical use of Penicillin, Sulpha drug and Antihistaminic ointment should be discouraged and no antibiotic which is intended for systematic use should be allowed to be marketed in formulations meant for topical use. Opthalmic use of antibiotics other than Penicillin and Sulphacetamide ointments and drops would however be necessary especially for the treatment of trachoma and other infections.

(b) The manufacturers should be asked to furnish data to justify the rationable and clinical efficacy of formulations which are not included in the National Formulary.

(c) Efforts should be made to manufacture in the public sector units drug which are essential and which could be manufactured in the public sector with the facilities available with them.

(d) In the case of the essential drugs which have to be improted, the foreign exchange implications, the position regarding their patents and data regarding the cost of their manufacture should be studied before decisions are taken for developing their manufacture. The medical profession should also be appraised of these aspects so that they could always prescribe substitutes wherever necessary.

## APPENDIX VI

(*Vide* Paragraph 6·2 1)

### (A) Names of the Units licensed to manufacture the specified basic drugs and abbreviations used for them in the Report

| Sl. No | Name of the Unit | Abbreviation |
|---|---|---|
| 1 | 2 | 3 |
| | (i) *Large Scale Units* | |
| 1 | Albert David Ltd , Calcutta 50 | Albert David |
| 2 | Alembic Chemical Works Co Ltd , Baroda | Alembic Chemical |
| 3 | Atul Drug House, Bulsar | Atul Drug House |
| 4 | Atul Products Ltd , Bulsar | Atul Products |
| 5 | Bayer (India) Ltd , Bombay-1 | Bayer |
| 6 | Bengal Chemical & Pharmaceutical Works Ltd , Calcutta 54 | Bengal Chemical |
| 7 | Bengal Immunity Co Ltd , Calcutta 13 | Bengal Immunity |
| 8 | Bio-Chemical & Synthetic Products Ltd , Hyderabad | Bio Chemicals |
| 9 | Biological Evans Ltd ,Hyderabad-20 | Biological Evans |
| 10 | Boehringer-Knoll Ltd , Bombay-1 | Boehringer-Knoll |
| 11 | Boots Pure Drug Co (India) Ltd ,Bombay-1 | Boots |
| 12 | Calcutta Chemical Co Ltd , Calcutta 29 | Calcutta Chemical |
| 13 | Chemical Industrial & Pharmaceutical Laboratories Ltd , Bombay-8 | CIPLA |
| 14 | Chemo-Pharma Laboratorers Ltd , Bombay-15 | Chemo Pharma |
| 15 | Chowgule & Co (Hind) Pvt Ltd ,Bombay 1 | Chowgule |



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| 1 | 2 | 3 |
|---|---|---|
| 16 | Cynamid India Ltd., Bombay-18 . . | Cyanamid |
| 17 | Dey's Medical Stores (Mfg.) Pvt. Ltd., Calcutta-16. | Dey's Medical |
| 18 | East India Pharmaceutical Works Ltd., Calcutta-26. | East India Pharmaceutical |
| 19 | Glaxo Laboratories (India) Pvt. Ltd., Bombay-18. | Glaxo Labs. |
| 20 | Haffkine Institute, Bombay-12 . . | Haffkine |
| 21 | Hind Chemicals Ltd., Kanpur . . | Hind Chemicals |
| 22 | Hindustan Antibiotics Ltd., Poona-8 . | Hindustan Antibiotics |
| 23 | Hoechst Pharmaceuticals Ltd., Bombay-1. | Hoechst |
| 24 | Indian Drugs & Pharmaceuticals Ltd., New Delhi. | IDPL |
| 25 | Indian Research Institute (Pvt.) Ltd., Calcutta-2. | Indian Research Institute |
| 26 | Kemp & Co., Bombay-28 . . . | Kemp & Co. |
| 27 | Mac Laboratoies Pvt. Ltd., Bombay-77 . | Mac Labs. |
| 28 | May & Baker Ltd., Bombay-78 . . . | May &Baker |
| 29 | Merck, Sharp & Dohme of India Ltd., Bombay-1. | Merck Sharp |
| 30 | Neo Pharma Private Ltd., Bombay-1 . . | Neo Pharma |
| 31 | Oriental Pharmaceutical Industries Ltd., Bombay-16. | OPIL |
| 32 | Parke-Davis (India) Ltd., Bombay-70 . | Parke-Davis |
| 33 | Pfizer Ltd., Bombay-1 . . . . | Pfizer |
| 34 | Roche Products Ltd., Bombay-34 WB . | Roche Products |
| 35 | Sarabhai Merck Ltd., Baroda . . | Sarabhai Merck |
| 36 | Standard Pharmaceuticals Ltd., Calcutta-14 | Standard Pharmaceuticals |
| 37 | South India Research Institute Pvt. Ltd., Vijayawada-7 (A.P.). | South India Res. Inst. |

| 1 | 2 | 3 |
|---|---|---|
| 38 | Synbiotics Ltd , Baroda | Synbiotics |
| 39 | Themis Phramaceuticals, Bombay-58 . | Themis Pharmaceuticals |
| 40 | Unichem Laboratories Ltd , Bombay-60 | Unichem Labs |
| 41 | Wander Pharmed Ltd , Bombay-1 | Wander Pharmed |
| 42 | Warner Hindustan Ltd , Bombay-1 | Warner |
| 43 | Wyeth Laboratories Ltd , Bombay-1 | Wyeth Labs |
| | (ii) *Small Scale Units* | |
| 1 | Alliance Trading Corporation Pvt Ltd , Calcutta | Alliance Trading |
| 2 | British Medicine & Pharmaceutical Co , Calcutta | British Medicine |
| 3 | Dr Karanth's Pharma Chemical Industry, Hyderabad | Dr Karanth's Pharmaceutical |
| 4 | Eagle Laboratory, Calcutta | Eagle Lab |
| 5 | G D A Chemicals, Calcutta | G D A Chemicals |
| 6 | Gujarat Pharmaceutical & Chemical Works, Ahmedabad | Gujarat Pharmaceuticals |
| 7 | Navarathna Pharmaceutical Laboratories, Cochin | Navarathna Pharmaceutical |
| 8 | Neogy Laboratories, Calcutta | Neogy Labs |
| 9 | Quinochem Laboratories, Sangli (Maharashtra) | Quinochem |
| 10 | Suneeta Laboratories, Indore | Suneeta Labs |
| 11 | Sunny Industries (P) Ltd , Calcutta | Sunny Industries |
| 12 | Swiss Chemicals, Hyderabad . | Swiss Chemicals |
| 13 | Syno-Chem Laboratories, Calcutta . | Syno-Chem |
| 14 | Texdyes Corporation, Bombay . | Texdyes |
| 15 | Universal Chemicals, Bombay-11 . . | Universal Chemicals |
| 16 | Usan Laboratories, Bombay . . . | Usan Labs |

## APPENDIX VI—(*Contd.*)

### (B) List of formulators (who are not manufacturers of the specified basic drugs) and the abbreviations used for them in the Report

| Sl. No. | Name of the formulator | Abbreviation used |
|---|---|---|
| 1 | 2 | 3 |
| | (i) *Large Scale Sector* | |
| 1 | Anglo-French Drug Co. (Eastern) Ltd., Bombay. | Anglo-French |
| 2 | British Drug House (India) Private Ltd., Bombay. | BDH |
| 3 | Burroughs Wellcome & Co. (India) Pvt. Ltd., Bombay. | Burroughs Welcome |
| 4 | Ciba of India Ltd., Bombay . . . | Ciba |
| 5 | Cilag-Hind, Bombay . . . . | Cilag-Hind |
| 6 | Crookes-Interfran Ltd., Bombay . . | Crookes |
| 7 | Fairdeal Corporation Private Ltd., Bombay | Fairdeal Corpn. |
| 8 | Geoffrey Manners & Co. Ltd., Bombay . | Geoffrey Manners |
| 9 | Indo-Pharma Pharmaceutical Works Pvt. Ltd., Bombay. | Indo-Phrma |
| 10 | Indian Health Institute & Laboratory Ltd., Calcutta. | Indian Health Instt. |
| 11 | Khandelwal Laboratories, Bombay . . | Khandelwal Labs. |
| 12 | Laboratories Grimault Pvt. Ltd., Bombay . | Labs. Grimault |
| 13 | Martin & Harris Pvt. Ltd., Calcutta . | Martin & Harris |
| 14 | Rallis India Ltd., Bombay . . . | Rallis |
| 15 | Smith Stanistreet & Co. Ltd., Calcutta . | Smith Stanistreet |
| 16 | Spencer & Co. Ltd., Madras . . | Spencer |
| 17 | Stadmed Private Ltd., Calcutta . . | Stadmed |
| 18 | Therapeutic Pharmaceuticals Pvt. Ltd., Bombay. | Therapeutic Pharmaceuticals |
| 19 | U. S. Vitamins & Pharmaceutical Company India Ltd., Bombay. | U. S. Vitamins |
| 20 | Zandu Pharmaceutical Works Pvt. Ltd., Bombay. | Zandu |
| 21 | Sanitex Chemical Industries Ltd., Bombay . | Sanitex |

| 1 | 2 | 3 |
|---|---|---|
| | (ii) *Small Scale Sector* | |
| 1 | AMAVA, Calcutta | AMAVA |
| 2 | Beacon Pharmaceuticals Bombay | Beacon |
| 3 | Biochem Pharm Industries Bombay | Biochem |
| 4 | Binuchem Laboratories Bombay | B nichem |
| 5 | Bronkol Private Ltd Calcutta | B onkol |
| 6 | Cadila Laboratories Ahmedabad | Cadila Labs |
| 7 | Duggan Laboratories (India) Bombay | Duggan Labs |
| 8 | Emsons Pharmaceuticals Co Pvt Ltd Poona | Emsons Pharmaceuticals |
| 9 | Flora Pharma, Kanpur | Flora Pharma |
| 10 | Gurco Pha ma Private Ltd New Delhi | Gurco Pharma |
| 11 | Imperial Pharmaceutical Products, Bombay | Imperial Pharmaceutical |
| 12 | Lyovak Laboratories Bombay | Lyovak Labs |
| 13 | Lyka Laboratories, Bombay | Lyka Labs |
| 14 | Orissa Redcross Blood Bank Calcutta | Orissa Redcross |
| 15 | Pharma Chem Manufactur ng Company, Bombay | Pharma Chem |
| 16 | Pharma Medico (India) Pvt Ltd, Bombay | Pharma-Medico |
| 17 | Roc Pharmaceuticals, Bombay | Roc Pharmaceuticals |
| 18 | Royal Laboratories, Hyderabad | Royal Labs |
| 19 | Sarpin Pharmaceutical, Bombay | Sarpin Pharmaceutical |
| 20 | Shetty's Pharmaceutical & B ological Ltd, Hyderabad | Shetty Pharmaceutical |
| 21 | Standard Laboratories Private Ltd, Calcutta | Standard Labs. |
| 22 | Syntho Pharma Private Ltd, Delhi | Syntho Pharma |

# APPENDIX VII

(*Vide* Paragraph 7·27)

## (A) Names of the formulators and the formulations manufactured by them

| Sl. No. | Name of the formulator | Specified drugs single drug formulations of which are manufactured | Specified drugs multiple drugs formulations of which are manufactured |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| | | (A) *Large Scale units* Manufacturers-*cum*-formulators of specified basic drugs | |
| 1 | Albert David Ltd., Calcutta. | Vitamin-B12<br>Vitamin C<br>Amodiaquin<br>Iodo-chlor-hydroxy-quinoline<br>Chlorpropamide<br>Tolbutamide<br>I.N.H.<br>P.A.S.<br>Prednisolone | I.N.H. and P.A.S. |
| 2 | Alembic Chemical Works Co. Ltd., Baroda. | Vitamin-A<br>Vitamin-B-12<br>Vitamin-C<br>Sulphadiazine<br>Penicillin<br>Streptomycin<br>Chloramphenicol<br>Tetracycline<br>Chloroquine<br>Iodo-chlor-hydroxy-quinoline<br>Tolbutamide<br>Insulin<br>Prednisolone | Penicillin and Streptomycin |
| 3 | Bengal Chemical and Pharmaceutical Works Ltd., Calcutta. | Vitamin B-12<br>Vitamin-C<br>Iodo-chlor-hydroxy-quinoline<br>Chlorpropamide<br>I.N.H.<br>Tetanus Anti-toxin | I.N.H. and P.A.S. |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 4 | Bengal Immunity Co. Ltd , Calcutta | Vitamin B12<br>Vitamin C<br>Chloroquin<br>Iodo-chlor hydroxy-quinoline<br>Insulin<br>I N H<br>Tetanus Anti toxin | Tetracycline, Chloroquine and iodo-chlor hydroxy quinoline |
| 5 | Biological Evans Ltd , Hyderabad | Vitamin C<br>P A S<br>Tetanus Anti toxin | I.N H. and P A.S |
| 6 | Boehringer Knoll Ltd , Bombay | Chloramphenicol<br>Tolbutamide | .. |
| 7 | Boots Pure Drug Co (India) Ltd , Bombay | Sulphadizine<br>Insulin<br>Prednisolone | . |
| 8 | Brahmachari Research Institute Pvt Ltd , Calcutta | Vitamin B12<br>Vitamin C<br>Iodo-chlor-hydroxy-quinoline<br>Prednisolone | . |
| 9 | Calcutta Chemical Co Ltd , Calcutta | I N H | . |
| 10 | Chemo-Pharma Laboratories Ltd | I N H | . |
| 11 | Cyanamid India Ltd , Bombay | Sulphadiazine<br>Tetracycline | .. |
| 12 | Dey's Medical Stores (Mfg ) Co Ltd , Calcutta | Vitamin B12<br>Vitamin C<br>Sulphadiazine<br>Penicillin<br>Streptomycin<br>Chloramphenicol<br>Tetracycline<br>Iodo chlor hydroxy-quinoline<br>Prednisolone | |
| 13 | East India Pharmaceutical Works Ltd , Calcutta | Iodo chlor hydroxy-quinoline | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 14 | Glaxo Laboratories (India) Pvt. Ltd., Bombay. | Vitamin-A<br>Vitamin-B12<br>Vitamin-C<br>Penicillin<br>Streptomycin<br>Insulin<br>I.N.H.<br>Prednisolone | Streptomycin and Penicillin |
| 15 | Haffkine Institute, Bombay. | Tolbutamide<br>Tetanus Anti-toxin | Penicillin and Streptomycin |
| 16 | Hind Chemicals Ltd. Kanpur. | Iodo-chlor-hydroxy-quinoline | .. |
| 17 | Hindustan Antibiotics, Poona. | Penicillin<br>Streptomycin<br>Tetracycline | .. |
| 18 | Hoechst Pharmaceutical Ltd., Bombay. | Penicillin<br>Tetracycline<br>Tolbutamide<br>P.A.S.<br>Tetanus Anti-toxin<br>Prednisolone | Penicillin and Streptomycin. |
| 19 | Mac Laboratories Pvt. Ltd., Bombay. | Vitamin-B12<br>Vitamin-C<br>Sulphadiazine<br>Chloramphenicol<br>Tetracycline<br>I.N.H. | Streptomycin, Chloramphenicol and Tetracycline |
| 20 | May & Baker Ltd., Bombay. | Sulphadiazine<br>Penicillin<br>Chloroquin<br>Iodo-chlor-hydroxy-quinoline | .. |
| 21 | Merck Sharp & Dohme of India Ltd., Bombay. | Vitamin-B12<br>Penicillin<br>Streptomycin<br>Tetracycline<br>Prednisolone | Penicillin and Streptomycin |
| 22 | Oriental Pharmaceutical Industries, Ltd. Bombay. | Vitamin-B12<br>Vitamin-C<br>Chloramphenicol<br>Tetracycline<br>Tolbutamide<br>I.N.H.<br>Prednisolone | .. |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 23 | Parke Davis (India) Ltd , Bombay | Chloramphenicol<br>Amodiaquin | Streptomycin and Chloramphenicol |
| 24 | Pfizer Ltd , Bombay | Penicillin<br>Streptomycin<br>Chloramphenicol<br>Tetracycline<br>Chlorpropamide<br>Insulin<br>I N.H<br>P A S<br>Prednisolone | Penicillin and Streptomycin |
| 25 | Roche Products Ltd , Bombay | Vitamin A<br>Vitamin C | .. |
| 26 | Standard Pharmaceutical Ltd , Calcutta | Iodo-chlor hydroxyquinoline | Chloramphenicol and Tetracycline |
| 27 | Themis Pharmaceuticals Ltd , Bombay | Vitamin B12 | . |
| 28 | Unichem Laboratories Ltd , Bombay | Vitamin C<br>Sulphadiazine<br>Chloramphenicol<br>Tetracycline<br>Chloroquin<br>Prednisolone | Streptomycin and Chloramphenicol |
| 29 | Wander Pharmed Ltd , Bombay | P A S | |
| 30 | Wyeth Laboratories, Bombay. | Prednisolone | .. |
| | | (B) *Large Scale units* (Formulators only) | |
| 31 | Anglo-French Drug Co , (Eastern) Ltd , Bombay | Vitamin B12<br>Vitamin C<br>Sulphadiazine | .. |
| 32 | Bayer (India) Ltd , Bombay | Chloroquin | .. |
| 33 | British Drug House (India) Pvt Ltd , Bombay. | Vitamin B12<br>Insulin | .. |
| 34 | Burroughs Wellcome & Co , (India) Pvt Ltd , Bombay | Insulin<br>Tetanus Anti-toxin | .. |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 35 | Chemical Industrial & Pharmaceutical Labs. Ltd., Bombay. | Vitamin-B12<br>Vitamin-C<br>Chloramphenicol<br>Tolbutamide<br>Prednisoline | Vitamin-A and Vitamin-C |
| 36 | Ciba of India Ltd., Bombay. | Iodochlor-hydroxy-quinoline | .. |
| 37 | Cilag-Hind Ltd., Bombay. | P.A.S. | .. |
| 38 | Crookes-Interfran Ltd., Bombay. | I.N.H.<br>P.A.S. | .. |
| 39 | Fairdeal Corporation Pvt. Ltd., Bombay. | Vitamin-B12<br>Chloramphenicol<br>Tetracycline<br>P.A.S. | .. |
| 40 | Geoffrey Manners & Co. Ltd., Bombay | Vitamin-B12<br>Penicillin<br>Chloramphenicol | .. |
| 41 | Indo-Pharma Pharmaceutical Works Ltd., Bombay. | Vitamin-A<br>Vitamin-C<br>Iodo-chlor-hydroxy-quinoline<br>I.N.H. | I.N.H. and P.A.S. |
| 42 | Indian Health Institute & Lab. Ltd., Calcutta. | Vitamin-A<br>Vitamin-B12<br>Vitamin-C<br>Iodo-chlor-hydroxy-quinoline<br>I.N.H. | Vitamin-A, Vitamin-B12 and Vitamin-C<br>I.N.H. and P.A.S. |
| 43 | Indian Research Institute (Pvt.) Ltd., Calcutta. | Iodo-chlor-hydroxy-quinoline | .. |
| 44 | Kemp & Co. Ltd., Bombay | Vitamin-C<br>Sulphadiazine<br>Chlorpropamide<br>Insulin | .. |
| 45 | Khandelwal Laboratories, Bombay. | Vitamin-B12<br>Vitamin-C<br>Sulphadiazine<br>Tetracycline | Streptomycin and Chloramphenicol<br>I.N.H. and P.A.S. |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 46 | Laboratories Grimault, Pvt Ltd, Bombay | Vitamin B12 | Tetracycline, Chloroquin and Iodo chlor-hydroxy-quinoline |
| 47 | Martin & Harris Pvt Ltd, Calcutta | Vitamin C<br>Sulphadiazine<br>Chloroquin<br>Iodo chlor hydroxy-quinoline<br>P A S | Tetracycline<br>Chloroquine and<br>Iodo-chlor hydroxy-quinoline |
| 48 | Neo-Pharma Industries Pvt Ltd., Bombay | P A S | • |
| 49 | Rallis India Ltd., Bombay | Vitamin-B12 | • |
| 50 | Sarabhai Chemicals, Baroda | Vitamin B12<br>Vitamin-C<br>Penicillin<br>Streptomycin<br>Tetracycline<br>I N H | Vitamin C<br>Penicillin,<br>Streptomycin and<br>Tetracycline |
| 51 | Smith, Stanistreet & Co. Ltd, Calcutta | Vitamin B12<br>Iodochlor hydroxy quinoline | Sulphadiazine and Penicillin<br>I N H and P A S |
| 52 | South India Research Institute Pvt Ltd, Vijayawada | Vitamin B12<br>Sulphadiazine<br>I N H | .. |
| 53 | Spencer & Co Ltd, Madras | Vitamin C<br>Sulphaidazine<br>Iodo-chlor hydroxy-quinoline<br>Prednisolone | |
| 54 | Stadmed Private Ltd, Calcutta | Vitamin C<br>I N H | |
| 55 | Therapeutic Pharmaceuticals Pvt Ltd, Bombay | Vitamin A<br>Vitamin C<br>Sulphadiazine<br>Chloroquin<br>I N H<br>P A S | • |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 56 | U.S. Vitamins & Pharmaceutical Co. of India Ltd., Bombay | Vitamin-A<br>Vitamin-C | .. |
| 57 | Zandu Pharmaceutical Works Ltd., Bombay | Vitamin-B12<br>Chloramphenicol<br>Tolbutamide<br>I.N.H.<br>P.A.S.<br>Prednisolone | I.N.H. and P.A.S. |
| 58 | Sanitex Chemical Industries Ltd., Bombay. | Vitamin-C<br>Sulphadiazine<br>Prednisolone | .. |
| | (C) *Medium and small scale formulators* | | |
| | Name of State : ANDHRA PRADESH | | |
| 1 | Akin Laboratories, Hyderabad. | Vitamin-B12<br>Vitamin-C<br>I.N.H.<br>Sulphadiazine | .. |
| 2 | Pharma Laboratories, Vijaywada. | Streptomycin | Combinations of Streptomycin |
| 3 | Royal Laboratories, Hyderabad. | Vitamin-B12<br>Vitamin-C | .. |
| 4 | Shetty's Pharmaceutical & Biological Ltd., Hyderabad | Vitamin-B12<br>Vitamin-C<br>P.A.S.<br>Sulphadiazine<br>Prednisolone<br>Iodo-chlor-hydroxy-quinoline<br>Chloroquin | .. |
| | Name of State : ASSAM | | |
| 1 | Assam Chemical & Pharmaceutical Ltd., Gauhati. | Iodo-chlor-hydroxy-quinoline Tabs | .. |
| 2 | Doson Chemical (Private) Ltd., Gauhati. | Vitamin C formulation | .. |
| | Name of State : BIHAR | | |
| 1 | National Chemcal and Pharmaceutical Works, Patna. | Vitamin-A, Vitamin-B12, Vitamin-C, I.N.H., P.A.S., Sulphadiazine. | .. |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 2 | Winner Pharmaceuticals, Patna | Vitamin B12, Vitamin-C, Sulphadiazine | |
| 3 | Liberty Mfg Co (India), Ranchi | Vitamin C PAS, Sulphadiazine | |
| 4 | The Bihar Chemical Industries Private Ltd, Monghyr | Vitamin-C | .. |
| | | Name of State Delhi | |
| 1 | Ranbaxy Laboratories, New Delhi | Penicillin, Streptomycin, *Chloramphenicol*, Tetracyclines, Vitamin B12 Vitamin-C, INH and PAS | |
| 2 | La Medica, New Delhi | *Penicillin Streptomycin* Chloramphenicol, Tetracycline, *Vitamin-B12*, Vitamin C, INH, PAS | |
| 3 | Gurco Pharma Pvt Ltd, New Delhi | Chloramphenicol, Tetracycline Vitamin-C INH, Vitamin-B12 PAS, Sulphadiazine | Chloramphenicol and Tetracycline Chloramphenicol and Streptomycin |
| 4 | Syntho Pharma Pvt Ltd, Delhi | Chloramphenicol, INH, Sulphadiazine | |
| 5 | Bhatnagars & Co, Delhi. | PAS, Sulphadiazine Chloroquin | |
| 6 | Sahib Singh Mfg Co Pvt Ltd, New Delhi | Vitam n B12 | .. |
| 7 | Cyper Pharma, New Delhi | Chloramphenicol Capsules Vitamin C Capsules Tetracycline Capsules | 1 Chloramphenicol and Streptomycin Caps<br>2 Chloramphenicol and Tetracycline Caps<br>3 Combinations of Vitamins |
| 8 | Hamdard (Wakf) Laboratories (India), Delhi | Vitamin C, Vitamin-A | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| | | Name of State : GUJARAT | |
| 1 | Arcon Pharmaceuticals, Ahmedabad. | Chloramphenicol, Tetracycline, Vitamin-C, Vitamin-B12. | |
| 2 | Allied Pharmaceuticals Baroda. | Chloramphenicol, Tetracyclines, Vitamin-B-12, Vitamin-C, I.N.H., P.A.S., Sulphadiazine, Prednisolone, Tolbutamide, Iodochlorhydroxyquinoline, Chlorpropamide, Vitamin-A. | |
| 3 | Astral Pharmaceutical Industries, Baroda. | Sulphadiazine | |
| 4 | Alar Laboratories, Ahmedabad. | Vitamin-B12, Vitamin-C, Sulphadiazine, Prednisolone, Iodo-chlorhydroxyquinoline, Chloroquin, Vitamin-A. | |
| 5 | Alpha Chemicals, Ahmedabad. | Vitamin-C, I.N.H., Sulphadiazine, Prednisolone. | |
| 6 | Cadila Laboratories, Ahmedabad. | Chloramphenicol, Vitamin-B12, Vitamin-C, I.N.H., Sulphadiazine, Prednisolone, Tolbutamide. | |
| 7 | Everest Chemical Industries, Ahmedabd. | Vitamin-B12, Vitamin-C, I.N.H., Sulphadiazine, Prednisolone, Iodochlorhydroxyquinoline, Vitamin-A, Chloramphenicol. | |
| 8 | Gujarat Pharmaceutical & Chemical Works, Ahmedabad. | Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C, I.N.H., P.A.S., Sulphadizine, Prednisolone, Chloroquin, Vitamin-A, Chlorpropamide. | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 9 | Lunik Pharma, Ahmedabad | Vitamin-A | |
| 10 | Mercury Pharmaceutical Industries, Baroda | Streptomycin, Chloramphenicol Tetracycline, Vitamin-B12, Vitamin C, I N H, P A S Sulphadiazine, Prednisolone, Iodochlorhydroxiquinoline, Chloroquin and Vitamin A | Vitamin B12 and Vitamin-A |
| 11 | Nibin Pharmaceuticals, Ahmedabad | Sulphadiazine and Prednisolone | |
| 12 | The Ratrieve Pharmaceuticals, Ahmedabad | Vitamin B12, I N H, Iodochlor hydroxiquinoline and Vitamin A | |
| 13 | Radiant Pharmaceuticals, Ahmedabad | Vitamin B12 Vitamin-A, Vitamin-C, I N H., Sulphadiazine and Prednisolone | Vitamin-B12 and Vitamin A |
| 14 | Ruby Laboratories, Ahmedabad | Vitamin B12 and Vitamin C, INH Prednisolone Iodochor hydroxy quinoline, Chloroquin, Vitam n A | |
| 15 | Stan Rel Private Ltd, Baroda | Vitamin B12, Vitamin-C, INH, Sulphadiazine, Prednisolone, Iodo-chlorhydroxyquinol ne, Chloroquin and Vitamin-A | |
| 16 | Sanitex Chemical Industries Ltd, Baroda | Vitamin C, Sulphadiazine and Prednisolone | INH and PAS |
| 17 | Sims Laboratories, Ahmedabad. | Chloramphenicol, Vitamin-B12, Vitamin-C, Sulphadiazine, Prednisolone | Vitamin-B12 and Vitamin-A |
| 18 | Tutor Pharmaceuticals, Ahmedabad | Prednisolone, Vitamin A | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| | | Name of State : HIMACHAL PRADESH | |
| 19 | Pharma Chemco Laboratory, Solan. | Vitamin-B12 | |
| | | Name of State : JAMMU & KASHMIR | |
| 1 | Drug Research Laboratory, Jammu. | Vitamin-C, Sulphadiazine | Vitamin-A and Vitamin-C. |
| 2 | Government Pharmaceutical Works, Baramulla. | Nil | Nil |
| 3 | Pharma Drugs Mfg. Co., Jammu Cantt. | Vitamin-B12, Vitamin-A, Iodo-chlor-hydroxy-quinoline, Tolbutamide, Tetracycline, PAS, Sulphadiazine, INH. | Vitamin-A and Vitamin-C. |
| 4 | Ephursum Pharmaceuticals, Jammu. | Vitamin-B12 | Vitamin-A and Vitamin-C. |
| 5 | Caulson Laboratories, Jammu. | INH, Sulphadiazine, Iodo-chlor-hydroxy-quinoline. | |
| | | Name of State : KERALA | |
| | Navarathna Pharmaceutical Laboratories, Cochin. | INH, Iodo-chlor-hydroxyquinoline. | Iodo-chlor-hydroxy-quinoline, Chloramphenicol, INH and PAS. |
| | | Name of State : MADHYA PRADESH | |
| 1 | Fine Pharmaceuticals, Indore. | Chloramphenicol, Tetracycline. | |
| 2 | Indian Pharmaceutical, Indore. | Vitamin Caps, Chloramphenicol, Tetracycline. | |
| 3 | IB Pharma, Indore. | Prednisolone | |
| 4 | Neo Drugs (India), Chindwara. | Chloramphenicol, Tetracycline, Vitamin-A. | |
| 5 | Plazma Laboratories, Indore. | Chloramphenicol, Tetracycline, Vitamin Preparations. | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 6 | Bombay Ideal Products, Indore | Pen c llin, Chloramphemcol, Tetracycline, Vitamin C, Vitam n A | |
| 7 | Brite Pharmaceuticals, Bhopal | Chloramphenicol Tetracycl ne Vitamin B12 | |
| 8 | Khandelwal Pharmaceuticals Indore | Preparation of Vitamins | |
| 9 | Bharat Pharmaceuticals, Indore | Vitamin Preparations, Ant b otics preparat ons | |
| 10 | Cyano Pharma,Indore | Vitamin A, Vitamin B 12 | |
| 11 | Chimco Pharma, Indore | Preparat ons of Vitamin | |
| 12 | Earnest & Co , Indore | Vitamin Preparations | |
| 13 | Impha labs , Indore | Vitamin Preparations | |
| 14 | Jamsons Laboratories, Indore | Vitamin Preparations | |
| 15 | Kamsor Laboratories, Indore | Antib otics Prepara t ons Vitam n Preparations | |
| 16 | Macon Drug Laboratories, Indore | Vitamin Preparations | |
| 17 | Mahendra Pharma, Indore | Vitamin Preparations | |
| 18 | Pure Pharma Products (India), Indore | Vitamin Preparations, Antibiotics Preparations | |
| 19 | Usha Products Raipur | Preparat ons of Vitamins, Preparations of Antib otics | |
| 20 | Uneque Pharma, Indore | INH | |
| 21 | Vostok Laboratories, Indore | Vitamin Preparations, Antibiotic Preparations | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| | | Name of State : MADRAS | |
| 1 | Indo-French Pharmaceutical Co., Madras. | Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A, Prednisolone, INH, PAS, Penicillin, Streptomycin. | Vitaimn-A, Vitamin-C and Vitamin-B12. |
| 2 | Pharma Products P. Ltd., Madras. | Vitamin-B12 | Vitamin-B12 and Vitamin-A. |
| 3 | Retort Labs., Madras. | Chloramphenicol, Tetracycline, Vitamin-B12, Vitamin-C IHN. | |
| 4 | United Pharma (India) P. Ltd., Madras. | Vitamin-B12, Tetracycline, Vitamin-C, PAS, INH, Penicillin, Chloramphenicol, Sulphadiazine. | INH and PAS Streptomycin and Chloramphenicol. |
| 5 | Amarchand Sobachand, Madras. | Chloramphenicol, Sulphadiazinel, INH, Tolbutamide, Vitamin-C. | Streptomycin and Chloramphenicol. |
| 6 | T.T. Krishnamachary Co., Madras. | Vitamin-A, Vitamin-C, Vitamin B12. | Vitamin-A, Vitamin-C and Vitamin-B12. |
| 7 | Intercem, Madras. | INH, Tolbutamide, Sulphadiazine, Vitamin-C. | |
| 8 | Linkson Pharma, Madras. | Sulphadiazine, PAS. | |
| 9 | Garutman Industries P. Ltd., Madras. | Vitamin-B12, Vitamin-C, INH, PAS, Sulphadiazine. | PAS and INH PAS and Vitamin-A. |
| 10 | Parwal & Sons, Madras | PAS INH, Vitamin-C, Iodo-chlor-hydroxyquinoline, Sulphadizaine. | |
| 11 | The South India Mfg. Co., Madurai. | Vitamin-B12, Sulphadiazine, Vitamin-A, Vitamin-C. | |
| 12 | Shakthi Remedies, Madurai. | Vitamin-C. | |
| 13 | Orient Pharma P. Ltd., Madras. | Vitamin-B12, Vitamin-C | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| | | Name of State : MAHARASHTRA | |
| 1 | Acichem Labs., Bombay | Chloramphenicol, Tetracycline. | Streptomycin and Chloramphenicol |
| 2 | Amber Research & Pharmaceutical Works, Bombay | Chloramphenical, Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Prednisolone, | |
| 3 | Atco Pharma Labs, Bombay | Chloramphenicol Tetracycline, Vitamin B12, Vitamin C, INH, Prednisolone | |
| 4 | Auxil Pharmaceuticals, Bombay. | Vitamin-B12, INH, Vitamin-A | |
| 5 | Beacon Pharmaceuticals, Bombay. | Chloramphenicol, Vitamin-B12, INH and Prednisolone | |
| 6 | Biochem Pharmaceutical Industries, Bombay | Chloramphenicol, Tetracycline Vitamin-B12, Vitamin-C, Sulphadiazine, Prednisolone Vitamin-A Chlorpropamide, Tetanus Anti-toxin | |
| 7 | Bimchem Laboratories, Bombay | Chloramphenicol Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Iodo-chlor-hydroxy-quinoline Vitamin-A, Chlorpropamide, Tetanus Anti-toxin | |
| 8 | Croydan Chemical Works Pvt. Ltd., Bombay | Chloramphenicol, Tetracycline, INH and PAS | |
| 9 | Chelsea Chemical Laboratories, Poona | INH | |
| 10 | Comex Laboratories, Bombay | Chloramphenicol Vitamin-B12, Vitamin-C, Sulphadiazine | |
| 11 | Duggan Labs (India), Bombay | Vitamin-B12, Iodo-chlor-hydroxy-quinoline | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 12 | Emsons Pharmaceuticals Co. P. Ltd., Poona. | INH. | |
| 13 | Emsons & Co., Bombay | INH, Sulphadiazine, Prednisolone, Insulin, Chloroquin. | |
| 14 | Eisen Pharmaceutical Co. P. Ltd., Poona. | Vitamin-C. | |
| 15 | Eddison Continental Labs. P. Ltd., Bombay. | Vitamin-B12, Vitamin-A | |
| 16 | Fleming Pharmaceuticals, Bombay. | INH, Sulphadiazine, Prednisolone. | |
| 17 | Franco-Indian Mfg. Ltd., Bombay. | Vitamin-B12, Sulphadiazine, Prednisolone. | |
| 18 | Imperial Pharmaceutical Products, Bombay. | Vitamin-C, INH, PAS, Sulphadiazine, Prednisolone, Iodo-chlor-hydroxy-quinoline, Chloroquin. | |
| 19 | Ipca Labs. Ltd., Bombay. | Vitamin-B12, Vitamin-C, INH, PAS, Sulphadiazine, Prednisolone, Iodo-chlor-hydroxy-quinoline, Chloroquin, Vitamin-A. | |
| 20 | Jaggat Pharma P. Ltd., Bombay. | Chloramphenicol, Tetracycline, Prednisolone. | |
| 21 | Lyovak Laboratories, Bombay. | Chloramphenicol, Tetracyline. | |
| 22 | Livite Labs. (India) Ltd., Bombay. | INH. | |
| 23 | Lyka Labs., Bombay. | Chloramphenicol, Vitamin-C, INH, Chloroquin. | |
| 24 | Milnex Labs., Bombay. | Chloramphenicol, Vitamin-B12. | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 25 | Medical Products of India, Bombay. | Sulphadiazine, Iodo-chlor-hydroxy-quinoline | |
| 26 | Neil Pharmaceuticals Bombay. | | INH and PAS |
| 27 | Nymph Laboratories, Bombay. | Chloramphenicol, Tetracycline Vitamin-A, Sulphadiazine, Prednisolone, Chloroquin | |
| 28 | Pharma-Medico (India) Pvt. Ltd, Bombay | Chloramphenicol, Tetracycline. | |
| 29 | Pharma-Chem Mfg Corpn, Bombay | Vitamin-B12 | |
| 30 | Pharmakon Laboratories, Bombay. | Chloramphenicol, Tetracycline Vitamin-C, INH, PAS, Sulphadiazine, Iodo-chlor-hydroxy-quinoline | INH and PAS. |
| 31 | Penicon Pharmaceutical & Chemical Industries, Bombay. | Vitamin-B12 | |
| 32 | Roc Pharmaceuticals, Bombay. | Vitamin B12, Vitamin-C, Iodo-chlor-hydroxy-quinoline Chloroquin, Vitamin-A | |
| 33 | Retort Laboratories, Bombay. | Chloramphenicol Tetracycline, Prednisolone, Sulphadiazine, INH & Vitamin-B12. | Streptomycin and Chloramphenicol Vitamin-A and Vitamin C, Vitamin A and Vitamin-B12, Vitamin C, INH and Vitamin-B12. |
| 34 | Samarth Pharmaceutical, Bombay. | Chloramphenicol Tetracycline, Vitamin-C, Sulphadiazine, Prednisolone, Iodo-chlor-hydroxy-quinoline. | Chloramphenicol and Streptomycin. |
| 35 | Sarpin Pharmaceutical, Bombay. | Prednisolone. | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 36 | Sunways (India) P. Ltd., Bombay. | Chloramphenicol, Tetracycline, Vitamin-B12. | . . . . |
| 37 | Trinity Laboratories, Bombay. | .. | INH and PAS |

NOTE.— Of the 184 units who are stated to be manufacturers of formulations of specified drugs in Maharashtra only 37 had furnished particulars.

Name of State : MYSORE

| | | | |
|---|---|---|---|
| 1 | Medicaids, Bangalore . | Tetracycline, Vitamin-A, Vitamin-B12, Vitamin-C, Sulphadiazine, Prednisolone. | |
| 2 | All India Mission's Tablet Industries, Bangarpet. | Iodo-chlor-hydroxyquinoline, Chloroquin. | |
| 3 | Associated Drug Co., Bangalore. | Vitamin-B12, INH. | |
| 4 | Bangalore Pharmaceuticals & Research Lab. Bangalore. | Vitamin-B12, Sulphadiazine. | |
| 5 | Indian Process & Chemical Laboratory, Bangalore. | Vitamin-B12. | |
| 6 | Indian Pharmaceuticals. Bangalore. | Vitamin-B12, Vitamin-A. | |
| 7 | International Chemical & Biological Institute, Bangalore. | Vitamin-B12. | |
| 8 | Malbas Chemicals & Pharmaceutical, Ltd., Bangalore. | Vitamin-B12, Vitamin-C. | |
| 9 | Medichem Laboratories, Bangalore. | Vitamin-B12, Vitamin-C. | |
| 10 | Mysore Industrial & Testing Laboratories, Bangalore. | Vitamin-B12, Vitamin-C, Vitamin-A. | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 11 | Pharma Aids, Bangalore | Vitamin-B12, Vitamin-C, Prednisolone, Iodo-chlorohydroxy-quinoline | |
| 12 | Alex Laboratories, Bijapur | Vitamin-B12, Vitamin-C | |
| 13 | Rampen Private Ltd., Bangalore | Vitamin-B12, Vitamin-A | |
| 14 | Capri Pharma, Bangalore | Vitamin-B12, Vitamin-C | |
| | | Name of State ORISSA | |
| 1 | Orissa Red Cross Blood Bank, Cuttack | Vitamin-C, PAS, Sulphadiazine | |
| 2 | Novo Pharmaceuticals P Ltd Cuttack | Vitamin-B12, Vitamin-C Sulphadiazine, Iodo-chlorhydroxy quinoline, Vitamin-A | |
| 3 | Bharat Salt and Chemical Industries Ltd., Cuttack | Ditto | |
| 4 | Orichem Laboratory Puri. | Ditto | |
| 5 | Jagannath Chemical and Pharmaceutical Industries, Cuttack | Ditto | |
| 6 | Orissa Fisheries Development Corporation Ltd., Cuttack | Ditto | |
| 7 | Paras Pharmaceuticals, Sambalpur | Ditto | |
| 8 | Radiant Pharmaceuticals, Sambalpur | Ditto | |
| 9 | Solorace Drugs Pvt Ltd., Cuttack | Ditto. | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| | | Name of State : RAJASTHAN | |
| 1 | Allied Chemical & Pharmaceutical Works, Jaipur. | INH. Vitamin-B12, Chloramphenicol, Sulphadiazine. | Chloramphenicol and Streptomycin. |
| 2 | Aspha Lab. Pvt. Ltd., Jaipur. | Vitamin-C. Vitamin-B12, Chloramphenicol, Tetracycline, Chloroquin. | |
| 3 | Bynechem Laboratories, Jaipur. | Vitamin-B12. | |
| 4 | Dueful Laboratory, Jaipur. | Tetracycline, Chloramphenicol, Vitamin-B12. | Chloramphenicol and Streptomycin. |
| 5 | Delux Pharma, Abu Road. | Iodo-chlor-hydroxy-quinoline, INH, Sulphadiazine, Vitamin-C, Prednisolone. | |
| 6 | Macsen Laboratories, Udaipur. | Sulphadiazine, Iodo-chlor-hydroxy-quinoline, Chloroquin. | |
| 7 | Relief Drug House, Abu Road. | Vitamin C. Iodo-chlor-hydroxy-quinoline. | |
| 8 | Stanley Laboratories, Jaipur. | Vitamin-B12, Vitamin-C, Iodo-chlor-hydroxy-quinoline, INH, Prednisolone, Sulphadiazine. | |
| 9 | Wander Chemical Works, Jaipur. | Chloramphenicol, Tetracycline, Iodo-chlor-hydroxy-quinoline, Sulphadiazine. | Chloramphenicol and Streptomycin. |
| 10 | Thio Pharma, Falur | Sulphadiazine, Iodo-chlor-hydroxy-quinoline, INH, Vitamin-C, Chloramphenicol, Tetracycline, Prednisolone. | |
| 11 | Rajasthan Pharmaceutical Laboratories, Jaipur. | Sulphadiazine, Vitamin-C. | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| | Name of State . UTTAR PRADESH | | |
| 1 | Pilco Pharma, Kanpur | Penicillin, Chloramphenicol | |
| 2 | Flora Pharma, Kanpur | Penicillin, Chloramphenicol, Tetracycline | |
| 3 | Onyx Laboratories (P) Ltd , Kanpur | Penicillin, Streptomycin, Chloramphenicol, Tetracycline Vitamin B12, Vitamin-C, Vitamin-A | |
| 4 | Swastik Pharmaceuticals, Varanasi. | Penicillin, Streptomycin Chloramphenicol Tetracycline, Vitamin-B12, Vitamin C Sulphadiazine, Vitamin-A | |
| 5 | Allodial Chemical Mfg Co , Meerut | Penicillin, Streptomycin Chloramphenicol, Tetracycline, Vitamin B12, Vitamin-C, Sulphadiazine, Vitamin-A | |
| 6 | Spa Pharma, Kanpur . | Streptomycin Chloramphenicol Vitamin B12 Vitamin-C, Vitamin-A | |
| 7 | Piya Pharmaceutical Works, Kanpur | Streptomycin, Chloramphenicol Tetracycline, Sulphadiazine | |
| 8 | Garga Pharma (P) Ltd , Lucknow | Chloramphenicol, Tetracycline Vitamin-B12, Vitamin C, Sulphadiazine Iodochlor hydroxy quinoline, Vitamin-A | |
| 9 | Harison Laboratories Kanpur. | Cholramphenicol Tetracycline Vitamin B12 Vitamin C, Sulphadiazine, Vitamin-A | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 10 | U.P. Drug House Pvt. Ltd. Lucknow. | Chloramphenicol Tettracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A. | |
| 11 | Rashtradeep Laboratory, Firozabad (Agra). | Tetracycline, Vitamin-B12, Vitamin-C, Vitamin-A. | |
| 12 | Martand Pharmaceuticals, Baraut (Meerut). | Tetracycline, Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A. | |
| 13 | National Chemical & Pharmaceutical Works Ghaziabad. | Tetracycline Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A. | |
| 14 | Narain Chemical Industries Kanpur. | Tetracycline. | |
| 15 | Parker Pharma (P) Ltd., Kanpur. | Tetracycline, Vitamin-B12, Vitamin C; Sulphadiazine, Vitamin-A. | |
| 16 | G. Praxen & Co. (P) Ltd., Lucknow. | Vitamin-B12, Vitamin-C, Vitamin-A. | |
| 17 | Arpi Chemical Industries Ltd., Kasganj. | Vitamin-B12, Vitamin-C, Vitamin-A. | |
| 18 | King Pharmaceutical Works, Allahabad. | Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A. | |
| 19 | New International Chemical P. Ltd., Bara Banki. | Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A. | |
| 20 | Reylite & Co., Meerut | Vitamin-B12, Vitamin-C, Vitamin-A. | |
| 21 | Vitamin Labs. of India P. Ltd., Lucknow. | Vitamin-B12, Vitamin-C., Vitamin-A. | |
| 22 | A.B.M. Research Institute, Lucknow. | Vitamin-B12, Vitamin-C, Sulphadiazine, Vitamin-A. | |

| 1 | 2 | | 3 | 4 |
|---|---|---|---|---|
| 23 | Narthe n India Che m cal Wo k Dattal V llage Meerut | V tam n B12 V tam n C Vitam n A | | |
| 24 | Sc ent fc Re ea ch In dustr e Lucknow | Vitamin B12 Vitam n C Iodo-cl lo hydroxy-qu ol ne V ta m n A | | |
| 2 | I c n Lab ato ies Allahaba l | V tam n B12 V ta m n C Vitam n A | | |
| 26 | Fa mex Labo ator es Mathura | Sulphad az i e | | |
| 27 | Asl Dwakhana Mathu a | Sulp au az e | | |
| 28 | Su ya Chem cal Luckn v | Sulphad az ne Icdo-chlo l yd xy-qu no-l e | | |
| 2 | M l cal Pharma Goh r | S pl ad az ne | | |
| 30 | Sup S anda d Cl e m cal Co Al ga l | Sulphad az n | | |
| 31 | Stalchem of Ind a Al e rl | Shlpl ad az ne | | |

Name of S ate West Bengal

| 1 | 2 | | 3 | 4 |
|---|---|---|---|---|
| 1 | Sa lhana Ausa lalaya D cca Calcut a | Ic cl lo l yd oxy q n l e | | V m A V ta m n C and Vitamu B12 |
| 2 | St m Pr l t C lc t a | Iodo-chlo hy l oxy q o C lo c q n INH S l l z n V am C V tan n B 12 | | V t m n B12 and Vita m n A |
| 3 | G D Pl armceu cal P L l C lcu a | Di oco l oxy cu ro l e C lo orun | | |
| 4 | L fe P a mace t cal P Ltd Ga a | V m n C V t m n B12 | | V n n B12 and V tam n A |
| 5 | Pav Lal o a e Pvt Ltd C lc tta | C o co n | | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 6 | Bronkol Pvt. Ltd., Calcutta. | INH, Sulphadiazine, Iodo-chloro-hydroxy-quinoline. | |
| 7 | Calcutta Chemical Research, Association Ltd., Calcutta. | Vitamin-B12 | Vitamin-C and Vitamin-A. |
| 8 | Moti Chemical Industries, Howrah. | Vitamin-A. | |
| 9 | Mahesh Laboratories Pvt. Ltd., Calcutta. | Vitamin-B12. | |
| 10 | The Ashok Bio-Pharma Ltd., Calcutta. | Vitamin-C, Vitamin-B12, Vitamin-A. | Vitamin-A and Vitamin-C, Vitamin-A, Vitamin-B12 and Vitamin-C. |
| 11 | Alliance Trading Corpn. P. Ltd., Calcutta. | Iodo-chlo -hydroxy-quinoline, Vitamin-B12 and PAS. | INH and PAS. |
| 12 | Immuno Chemical Laboratory, Calcutta. | Vitamin-B12. | Vitamin-C and Vitamin-A. |
| 13 | Ensand Pharmaceuticals Pvt. Ltd., Calcutta. | Vitamin-B12, INH. | |
| 14 | Dr. Bose's Laboratory, Calcutta. | Vitamin-B12, Vitamin-C. | Di-iodo-hydroxy-quinoline and Chloroquin. |
| 15 | International Remedies Pvt. Ltd., Calcutta. | Vitamin-B12, Vitamin-C. | |
| 16 | Modern Drug House, Calcutta. | Vitamin-C, Vitamin-A | |
| 17 | G.D.A. Chemicals, Calcutta. | Vitamin-B12, Vitamin-A, INH, PAS, Iodo-chlor-hydroxy-quinoline | Vitamin C and Vitamin A PAS and INH. |
| 18 | Frank Ross & Co. Ltd., Calcutta. | Sulphadiazine. | |
| 19 | Bengal Health Products Pvt. Ltd., Calcutta | Iodo-chlo -hyd oxy-quinoline, Vitamin B12 | Vitamin-C, INH and PAS. |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 20 | Indian National Drug Co, Calcutta | Vitamin B12, Vitamin-C, PAS, Iodo-chlor-hydroxy-quinoline | Vitamin-B12 and Vitamin-A |
| 21 | Glucodex Laboratories, Calcutta | Vitamin C, Vitamin-B12 | Vitamin B12 and Vitamin-A |
| 22 | Standard Chemical & Pharmaceutical Wo ks Calcutta | Vitamin A, Vitamin-C, Vitamin-B12 | - |
| 23 | Hindusthan Medical Service P Ltd, Calcutta | Vitamin-B12 | |
| 24 | Bio-Pharma Laboratories, Calcutta | Vitamin-B12 | Vitamin-C and Vitamin-B12 |
| 25 | East India Chemical Works, Calcutta | Vitamin B12, Vitamin-A | |
| 26 | Sanny D ugs & Chemical Works, Calcutta | Vitamin-A | |
| 27 | Diamond Drugs & Chemical Works, Calcutta | Sulphadiazine. | |
| 28 | *The Orient Research and Chemical Lab, Howrah* | *Vitamin-B12, Iodo-chlor-hydroxy-quinoline* | |
| 29 | Eastern Pharma Products, Calcutta | Sulphadiazine, Iodo-chlor-hydroxy-quinoline | |
| 30 | *Mendine Pharmaceutical Wo ks, Calcutta* | Vitamin-A | |
| 31 | Pastur Laboratories P Ltd, Calcutta | Vitamin B12, Vitamin-C | |
| 32 | Bharat Immunity Lab, Calcutta | Vitamin-A, Vitamin-B12. | Vitamin-A and INH |
| 33 | The Pharmed Research Laboratory, Calcutta | Sulphadiazine | |
| 34 | Calcutta National Chemical Industries P Ltd Calcutta | Vitamin-B12, Iodo-chlor-hydroxy-quinoline, Chloroquin. | Vitamin-A, Vitamin-B12 and Vitamin-C |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 35 | AMAVA, Calcutta. | Vitamin-C, Iodo-chlor-hydroxy-quinoline, Vitamin-A. | Vitamin-C and Vitamin-A. Vitamin-C, INH and PAS. |
| 36 | N.I. Pharmaceutical Works, Calcutta. | Vitamin-B12, Vitamin-C. | |
| 37 | Standard Pharma Remidies, Calcutta. | Vitamin-B12, Vitamin-A. | Vitamin-B12, and Vitamin-A Vitamin-B12, Vitamin-A and Vitamin-C. |
| 38 | C S.I. Chemicals and Pharmaceuticals P. Ltd., Calcutta. | Vitamin-B12, Vitamin-A, Iodo-chlor-hydroxy-quinoline. | Vitamin-A and Vitamin-C. |
| 39 | Nivea Pharmaceuticals Ltd., Calcutta. | PAS. | INH and PAS. |
| 40 | Phoenix Drug House P. Ltd., Calcutta | Vitamin-C, Vitamin-B12. | Vitamin-C and Vitamin-A. |
| 41 | Bharati Chemical Works, Calcutta. | Vitamin-B12, Iodo-chlor-hydroxy-quinoline, Vitamin-C. | Vitamin-A and Vitamin-B12. |
| 42 | N. P. Industries. | Iodo-chlor-hydroxy-quinoline. Sulpha-diazine, Vitamin-C. | |
| 43 | Pearl Chemical Industries P. Ltd., Calcutta. | Vitamin-B12. | |
| 44 | Vax Institute Laboratory Ltd., Calcutta. | Vitamin-B12, Vitamin-A. | |
| 45 | Sunny Industries P. Ltd., Calcutta. | Iodo-chlor-hydroxy-quinoline, and Di-iodo-nydroxy-quinoline. | |
| 46 | Panceea Laboratories, Calcutta. | Sulphadiazine. | |
| 47 | Indo-Pharama Laboratory, Calcutta. | Di-iodo-hydroxy-quinoline. | |
| 48 | The Oriental Research & Chemical Laboratory Ltd., Howrah. | Iodo-chlor-hydroxy-quinoline, Vitamin-B-12, Vitamin-A. | |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 49 | Eastern Chemical Laboratory, Calcutta | Vitamin A | |
| 50 | Standard Laboratories P Ltd, Calcutta | Iodo chlo hyd oxy quinoline | |
| 51 | Treatment Home Products, Calcutta | Iodo-chlo hyd oxy quinoline, INH Vitamin C | |
| 52 | Indian National Drug P Ltd, Calcutta | Iodo chlo hydroxy quinoline | |
| 53 | Chemotherapeutic Laboratories, Calcutta | Vitamin B12 | |
| 54 | The Carbon Laboratories, Calcutta | Vitamin C | |
| 55 | Dipon Laboratory, Calcutta | Vitamin A, Vitamin B12 | |
| 56 | Oriental Chemical Works P Ltd Calcutta | Vitamin B12 Vitamin C Iodo-chlorohydroxy-quinoline INH, PAS | Vitamin A and Vitamin C |
| 57 | Addco Ltd, Calcutta | Vitamin C Sulphadiazine Iodo-chlor hydroxy quinoline | |
| 58 | Dolphin Laboratories P Ltd, Calcutta | Iodo-chlo hydroxy quinoline Vitamin A | |
| 59 | Nivea Pharmaceutical Ltd, Konnagar | INH PAS | PAS and INH |
| 60 | Syno Chem Laboratories, Calcutta | Iodo-chlo hydroxy quinoline | |

# APPENDIX VIII

(*Vide* Paragraph 10·4)

## Unit-wise statement of production, self-consumption, sales and exports of the specified basic drugs

| Sl. No. | Name of the basic drug | Name of the manufacturer | Unit of measurement | Year | Production | Self consumption | Sales | Exports |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | *Vitamin-A* . . . | (1) Roche Products | MMU | 1964 | 16·02 | 10·79 | 4·53 | .. |
| | | | | 1965 | 15·75 | 9·76 | 4·69 | .. |
| | | | | 1966 | 14·33 | 9·24 | 5·17 | .. |
| | | | | 1967 | 14·60 | 9·19 | 5·13 | Nil |
| | | (2) Glaxo Labs. | MMU | 1964 | 6·70 | 1·69 | 1·14 | .. |
| | | | | 1965 | 8·80 | 1·73 | 1·47 | .. |
| | | | | 1966 | 7·10 | 1·84 | 3·10 | 1·09 |
| | | | | 1967 | 9·25 | 1·79 | 3·26 | Nil |
| 2 | *Vitamin-B12* | | | | | | | |
| | (A) Vitamin-B12 . . | (1) Merck Sharp | Kgs. | 1964 | 21·30 | 4·90 | 17·80 | .. |
| | | | | 1965 | 27·20 | 6·80 | 22·00 | — |
| | | | | 1966 | 41·80 | 13·40 | 28·00 | Nil |
| | | | | 1967 | 43·40 | 11·00 | 33·00 | Nil |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | (2) Themis Pharmaceutical. | Kgs | 1964 | | | | |
| | | | 1965 | | | | |
| | | | 1966 | | | | |
| | | | 1967 | 10 35 | 10 35 | | |
| (B) Vitamin B12(b) . | (1) Glaxo Labs. | Kgs | 1964 | Nil | 0 60 | | . |
| | | | 1965 | 0 50 | 0 80 | | |
| | | | 1966 | 2 10 | 1 30 | 0 46 | |
| | | | 1967 | 1 47 | 1 74 | 0 12 | Nil |
| | (2) Merck Sharp | Kgs | 1964 | 8 50 | 8 50 | Nil | |
| | | | 1965 | 7 90 | 8 40 | Nil | |
| | | | 1966 | 10 30 | 9 30 | Nil | Nil |
| | | | 1967 | 10 20 | 9 30 | Nil | Nil |
| 3 *Vitamin C* . . . | Sarabhai Merck | M T | 1964 | 78 00 | | 71 18 | |
| | | | 1965 | 90 00 | | 102 35 | |
| | | | 1966 | 131 00 | | 112 00 | |
| | | | 1967 | 77 00 | | 37 84 | |
| 4 *Sulphadiazine* . . | (1) Atul Products | M T | 1964 | 52 46 | Nil | 58 44 | |
| | | | 1965 | 63 84 | Nil | 62 37 | |
| | | | 1966 | 12 44 | Nil | 14 26 | Nil |
| | | | 1967 | Nil | Nil | Nil | Nil |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| 4 | *Sulphadiazine*—Contd. | (2) May & Baker | M.T. | 1964 | 24·21 | 23·49 | .. | Nil |
| | | | | 1965 | 43·87 | 40·13 | .. | Nil |
| | | | | 1966 | 64·97 | 57·62 | 1·15 | Nil |
| | | | | 1967 | 43·86 | 49·21 | 5·05 | Nil |
| 5 | *Penicillin* | (1) Hindustan Antibiotics. | MMU | 1964 | 50·68 | 18·01 | 35·15 | .. |
| | | | | 1965 | 58·48 | 18·53 | 49·99 | .. |
| | | | | 1966 | 68·21 | 18·33 | 54·26 | Nil |
| | | | | 1967 | 59·55 | 22·66 | 36·25 | Nil |
| | | (2) Alembic | MMU | 1964 | 20·37 | 9·12 | 11·70 | .. |
| | | | | 1965 | 28·05 | 11·86 | 18·30 | .. |
| | | | | 1966 | 51·00 | 16·59 | 16·10 | 0·30 |
| | | | | 1967 | 25·85 | 15·45 | 10·40 | Nil |
| | | (3) Standard Pharmaceuticals. | MMU | 1964 | 14·03 | 0·44 | 13·75 | .. |
| | | | | 1965 | 16·08 | 1·71 | 15·66 | .. |
| | | | | 1966 | 26·66 | 3·32 | 22·32 | Nil |
| | | | | 1967 | 33·11 | 4·55 | 7·07 | Nil |
| 6 | *Streptomycin* | (1) Hindustan Antibiotics | M.T. | 1964 | 32·51 | 8·92 | 25·15 | .. |
| | | | | 1965 | 55·24 | 19·86 | 42·52 | .. |
| | | | | 1966 | 68·59 | 20·21 | 46·81 | Nil |
| | | | | 1967 | 64·59 | 35·71 | 29·12 | Nil |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | (2) Synbiotica | M T | 1964 | 25 16 | - | 32 99 | |
| | | | 1965 | 36 28 | . | 37 56 | |
| | | | 1966 | 35 75 | | 36 81 | 0 20 |
| | | | 1967 | 60 60 | | 60 81 | Nil |
| 7 *Chloramphenicol* . . | (1) *Parke-Davis* | M T | 1964 | 8 79 | 8 78 | Nil | |
| | | | 1965 | 11 81 | 8 99 | Nil | 1 00 |
| | | | 1966 | 11 01 | 9 38 | Nil | 3 00 |
| | | | 1967 | 11 86 | 9 87 | Nil | 2 50 |
| | (2) Boehringer knoll | M T | 1964 | 10 00 | 2 40 | 3 50 | |
| | | | 1965 | 13·40 | 4 70 | 7 70 | |
| | | | 1966 | 12 91 | 7 00 | 4 54 | Nil |
| | | | 1967 | 9 71 | 8 41 | 0 82 | Nil |
| | (3) Mac Labs | M T | 1964 | 0 90 | 0 90 | | |
| | | | 1965 | 0 40 | 0 40 | | |
| | | | 1966 | 0 30 | 0 30 | | |
| | | | 1967 | Nil | 0 30 | | |
| 8 *Tetracyclines* . . . | (1) *Pfizer* | M T | 1964 | 8 80 | 4 50 | 2 80 | |
| | | | 1965 | 8 50 | 7 10 | 2 00 | |
| | | | 1966 | 8 87 | 7 70 | 0 12 | Nil |
| | | | 1967 | 8 00 | 9 62 | 0 21 | Nil |
| | (2) Cyanamid | M T | 1964 | 8 92 | 4 34 | 0 40 | |
| | | | 1965 | 8 58 | 4 30 | 0 70 | |
| | | | 1966 | 6 25 | 5 49 | 0 24 | Nil |
| | | | 1967 | 4 99 | 4 53 | | Nil |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| 8 | *Tetracyclines*—Contd. . | (3) Hindustan Antibiotics | M.T. | 1964 | 0·16 | 0·17 | .. | .. |
| | | | | 1965 | 0·14 | 0·25 | .. | .. |
| | | | | 1966 | 0·12 | 0·15 | Nil | Nil |
| | | | | 1967 | 0·02 | 0·15 | Nil | Nil |
| | | (4) Synbiotics | M.T. | 1964 | 1·90 | .. | 1·50 | .. |
| | | | | 1965 | 3·40 | .. | 3·90 | .. |
| | | | | 1966 | 4·50 | .. | 4·30 | .. |
| | | | | 1967 | 2·60 | .. | 0·20 | .. |
| 9 | *Amodiaquin* . . . | Albert David | M.T. | 1964 | 0·08 | 0·08 | Nil | .. |
| | | | | 1965 | 0·02 | 0·02 | Nil | .. |
| | | | | 1966 | 0·07 | 0·07 | Nil | .. |
| | | | | 1967 | 0·08 | 0·08 | Nil | Nil |
| | | Parke-Davis | M.T. | 1964 | 9·93 | 9·69 | Nil | Nil |
| | | | | 1965 | 10·69 | 11·65 | Nil | Nil |
| | | | | 1966 | 14·85 | 14·94 | Nil | Nil |
| | | | | 1967 | 11·51 | 9·71 | Nil | Nil |
| 10 | *Chloroquin* . . . | Bengal Immunity | M.T. | 1964 | 1·21 | 1·05 | 0·15 | .. |
| | | | | 1965 | 2·42 | 0·99 | 0·47 | .. |
| | | | | 1966 | 2·79 | 2·68 | 0·87 | ... |
| | | | | 1967 | 3·43 | 3·35 | 0·07 | Nil |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 11 | *A Iodo-chlor-hydroxy-quinoline* | (i) *Large scale units* Albert David | M T | 1964 | 0 24 | 0 24 | | |
| | | | | 1965 | 0 28 | 0 28 | • | |
| | | | | 1966 | 0 92 | 0 92 | | •• |
| | | | | 1967 | 0 70 | 0 70 | | |
| | | Alembic Chemical | M T | 1964 | 3 66 | 1 21 | 2 04 | |
| | | | | 1965 | 4 66 | 1 55 | 1 14 | • |
| | | | | 1966 | 1 91 | 1 65 | Nil | Nil |
| | | | | 1967 | Nil | 0 91 | Nil | Nil |
| | | Atul Products | M T | 1964 | 25 94 | Nil | 19 60 | |
| | | | | 1965 | 23 99 | Nil | 30 30 | |
| | | | | 1966 | 41 17 | Nil | 35 19 | Nil |
| | | | | 1967 | 19 20 | Nil | 17 60 | |
| | | Bengal Chemical | M T | 1964 | 0 87 | 0 95 | Nil | Nil |
| | | | | 1965 | 0 69 | 0 67 | Nil | Nil |
| | | | | 1966 | 0 59 | 0 69 | Nil | Nil |
| | | | | 1967 | 0 27 | 0 15 | Nil | Nil |
| | | Brahmachari Research Institute | M T | 1964 | 0 70 | 0 70 | | |
| | | | | 1965 | 0 30 | 0 30 | | |
| | | | | 1966 | 0 60 | 0 30 | | |
| | | | | 1967 | 0 38 | 0 38 | Nil | |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| | | East India Pharmaceutical. | M.T. | 1964 | 19·30 | 19·19 | .. | .. |
| | | | | 1965 | 21·30 | 21·24 | .. | .. |
| | | | | 1966 | 23·00 | 22·06 | Nil | .. |
| | | | | 1967 | 24·70 | 24·70 | Nil | .. |
| 11. | *A—Iodo-chlor-hydroxy-quinoline*—Contd. | Hind Chemicals | M.T. | 1964 | 0·40 | 0·40 | .. | .. |
| | | | | 1965 | 0·30 | 0·30 | .. | .. |
| | | | | 1966 | 0·40 | 0·40 | .. | .. |
| | | | | 1967 | 0·53 | 0·39 | .. | .. |
| | | Standard Pharmaceuticals. | M.T. | 1964 | 1·50 | 1·50 | Nil | .. |
| | | | | 1965 | 1·60 | 1·60 | Nil | .. |
| | | | | 1966 | 1·10 | 1·10 | Nil | .. |
| | | | | 1967 | 1·61 | 1·17 | Nil | .. |
| | | *Small scale units* | | | | | | |
| | | Alliance Trading | M.T. | 1964 | 5·10 | 0·30 | 4·80 | .. |
| | | | | 1965 | 6·20 | 0·30 | 5·90 | .. |
| | | | | 1966 | 7·40 | 0·30 | 10·00 | .. |
| | | | | 1967 | 10·17 | 0·32 | 9·80 | .. |
| | | British Medicine | M.T. | 1964 | .. | .. | .. | .. |
| | | | | 1965 | 0·20 | .. | .. | .. |
| | | | | 1966 | 0·70 | .. | .. | .. |
| | | | | 1967 | 0·89 | 0·39 | 0·30 | .. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Eagle Lab | M T | 1964 | 0 80 | | .. | .. |
| | | 1965 | 0 50 | .. | — | — |
| | | 1966 | 1 86 | 0 06 | 1 66 | — |
| | | 1967 | 1 29 | 1 23 | 0 17 | |
| G D A Chemicals | M T | 1964 | 0 19 | 0 16 | . | |
| | | 1965 | 0 20 | 0 18 | | |
| | | 1966 | 0 21 | 0 21 | Nil | Nil |
| | | 1967 | 0 25 | 0 22 | — | .. |
| Neogy Labs | M T | 1964 | 5 46 | Nil | 5 50 | .. |
| | | 1965 | 5 83 | Nil | 5 80 | .. |
| | | 1966 | 6 54 | Nil | 6 50 | — |
| | | 1967 | 8 93 | Nil | 8 90 | |
| Sunny Industries | M T | 1964 | | | .. | .. |
| | | 1965 | 1 10 | | 1 1 | — |
| | | 1966 | 0 41 | Nil | 0 41 | — |
| | | 1967 | 1 33 | Nil | 1 33 | — |
| Swiss Chemicals | M T | 1964 | — | — | — | — |
| | | 1965 | 0 30 | | 0 30 | — |
| | | 1966 | 0 50 | | .. | .. |
| | | 1967 | 0 50 | Nil | 1 45 | .. |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| | | Synd-Chem | M.T. | 1964 | 0·10 | 0·10 | 0·10 | .. |
| | | | | 1965 | 1·10 | 1·10 | 1·10 | .. |
| | | | | 1966 | 1·60 | 1·60 | 1·60 | .. |
| | | | | 1967 | 1·08 | Nil | 0·92 | .. |
| 11. | *B—Di-iodo-hydroxy-quinoline* | *Large scale sector* | | | | | | |
| | | Albert David | M.T. | 1964 | 0·70 | 0·70 | .. | .. |
| | | | | 1965 | 1·70 | 1·70 | .. | .. |
| | | | | 1966 | 1·50 | 1·50 | .. | .. |
| | | | | 1967 | 1·35 | 1·19 | .. | .. |
| | | Alembic Chemical | M.T. | 1964 | 0·05 | 0·07 | Nil | Nil |
| | | | | 1965 | 0·09 | 0·06 | Nil | Nil |
| | | | | 1966 | 0·48 | 0·13 | Nil | Nil |
| | | | | 1967 | Nil | 0·20 | Nil | Nil |
| | | Bengal Chemical | M.T. | 1964 | Nil | Nil | Nil | .. |
| | | | | 1965 | Nil | Nil | Nil | .. |
| | | | | 1966 | 0·04 | 0·04 | Nil | Nil |
| | | | | 1967 | 0·03 | 0·23 | Nil | Nil |
| | | Bengal Immunity | M.T. | 1964 | 3·92 | 3·58 | 0·01 | Nil |
| | | | | 1965 | 2·23 | 1·62 | 0·01 | Nil |
| | | | | 1966 | 1·74 | 2·59 | 0·01 | Nil |
| | | | | 1967 | 3·18 | 2·77 | Nil | Nil |

| | | | | | | |
|---|---|---|---|---|---|---|
| Brahmachari Research | M T | 1964 | 0 04 | 0 04 | Nil | Nil |
| | | 1965 | 0 07 | 0 07 | Nil | Nil |
| | | 1966 | 0 04 | 0 04 | Nil | Nil |
| | | 1967 | 0 01 | 0 02 | Nil | Nil |
| Biological Evans | M T | 1964 | .. | .. | .. | .. |
| | | 1965 | | . | .. | .. |
| | | 1966 | 0 60 | | 1 17 | |
| | | 1967 | 0 10 | 0 10 | 0 10 | |
| East India Pharmaceutical | M.T | 1964 | 1 40 | 1 38 | | . |
| | | 1965 | 1 70 | 1 73 | | . |
| | | 1966 | 3 01 | 3 01 | Nil | Nil |
| | | 1967 | 3 88 | 3 88 | Nil | Nil |
| May & Baker | M T | 1964 | 3 91 | 3 45 | Nil | |
| | | 1965 | 4 55 | 4 01 | Nil | |
| | | 1966 | 0 41 | 1 99 | Nil | |
| | | 1967 | 4 50 | 3 78 | Nil | |
| Standard Pharmaceutical | M T | 1964 | 0 20 | 0 20 | | |
| | | 1965 | Nil | | | |
| | | 1966 | Nil | .. | | . |
| | | 1967 | Nil | | | |
| Synbiotics | M T | 1964 | 8 77 | N l | 7 96 | Nil |
| | | 1965 | 9 09 | Nil | 8 84 | Nil |
| | | 1966 | 6 39 | Nil | 5 77 | Nil |
| | | 1967 | 1 48 | Nil | 1 50 | |

| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|
| 11. *B—Iodo-chlor-hydroxy-quinoline*(contd.) | *Small scale sector* British Medicine | M.T. | 1964 | .. | .. | .. | .. |
| | | | 1965 | 0·10 | .. | .. | .. |
| | | | 1966 | 0·10 | .. | .. | .. |
| | | | 1967 | 0·13 | 0·19 | .. | .. |
| | Eagle Lab. | M.T. | 1964 | 1·80 | .. | .. | .. |
| | | | 1965 | 1·40 | .. | .. | .. |
| | | | 1966 | 0·81 | 0.03 | 0·77 | .. |
| | | | 1967 | 0·32 | 0·08 | 0·24 | .. |
| | Navarathna Pharmaceuticals | M.T. | 1964 | .. | .. | .. | .. |
| | | | 1965 | .. | .. | .. | .. |
| | | | 1966 | 0·10 | .. | .. | .. |
| | | | 1967 | 0·08 | 0·09 | Nil | .. |
| | Neogy Labs. | M.T. | 1964 | 2·50 | .. | 2·50 | .. |
| | | | 1965 | 0·30 | .. | 0·39 | .. |
| | | | 1966 | 0·94 | Nil | 0:94 | .. |
| | | | 1967 | 3·62 | Nil | 3:62 | .. |
| | Swiss Chemicals | M.T. | 1964 | .. | .. | .. | .. |
| | | | 1965 | 0·40 | .. | .. | .. |
| | | | 1966 | 0·50 | .. | 0·40 | .. |
| | | | 1967 | 0·90 | Nil | 0·87 | .. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Sunny Industries | M T | 1964 | | . | .. | .. |
| | | | 1965 | 0 40 | | 0 40 | . |
| | | | 1966 | 0 63 | Nil | 0 60 | .. |
| | | | 1967 | 0 38 | Nil | 0 40 | |
| 12 *Chlorpropamide* | Albert David | M T | 1964 | 0 02 | 0 02 | . | .. |
| | | | 1965 | 0 07 | 0 07 | | .. |
| | | | 1966 | 0 05 | 0 05 | .. | .. |
| | | | 1967 | 0 06 | 0 06 | | .. |
| | Bengal Chemical | M T | 1964 | 0 05 | 0 05 | .. | .. |
| | | | 1965 | 0 06 | 0 06 | | .. |
| | | | 1966 | 0 09 | 0 09 | .. | Nil |
| | | | 1967 | 0 12 | 0 09 | Nil | Nil |
| | Pfizer | M T | 1964 | .. | .. | | .. |
| | | | 1965 | 1 82 | 0 58 | . | .. |
| | | | 1966 | 12 21 | 5 01 | 4 90 | 4 90 |
| | | | 1967 | 2 15 | 3 96 | .. | .. |
| 13 *Tolbutamide* . | . Albert David | M T. | 1964 | Nil | . | .. | .. |
| | | | 1965 | Nil | | .. | .. |
| | | | 1966 | 0 43 | 0 43 | .. | .. |
| | | | 1967 | Nil | Nil | . | .. |
| | Hoechst Pharmaceutical | M T | 1964 | 10 60 | 11 30 | | .. |
| | | | 1965 | 16 40 | 12 50 | | . |
| | | | 1966 | 24 50 | 17 00 | 2 00 | Nil |
| | | | 1967 | 12 00 | 18 50 | 0 35 | Nil |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| | | Unichem Labs. | M.T. | 1964 | 0·40 | .. | 0·20 | .. |
| | | | | 1965 | 0·05 | .. | 0·03 | .. |
| | | | | 1966 | 0·08 | .. | 0·07 | .. |
| | | | | 1967 | 0·49 | Nil | 0·03 | .. |
| 14 | *Insulin* . . | . Boots | M. U. | 1964 | Nil | Nil | Nil | Nil |
| | | | | 1965 | 439 | 105 | 89 | Nil |
| | | | | 1966 | 458 | 311 | 199 | Nil |
| | | | | 1967 | 410 | 393 | 166 | Nil |
| | | *Large scale sector* | | | | | | |
| 15 | *I.N.H.* . . | . Albert David | M.T. | 1964 | 0·795 | 0·795 | .. | .. |
| | | | | 1965 | 0·617 | 0·617 | .. | .. |
| | | | | 1966 | 1·010 | 1·010 | .. | .. |
| | | | | 1967 | 0·192 | 0·192 | .. | .. |
| | | Bengal Chemical | M.T. | 1964 | 0·422 | 0·090 | 0·20 | .. |
| | | | | 1965 | 0·222 | 0·058 | 0·04 | .. |
| | | | | 1966 | 0·133 | 0·125 | 0·01 | Nil |
| | | | | 1967 | 0·0405 | 0·0726 | Nil | Nil |
| | | Bengal Immunity | M.T. | 1964 | 5·584 | 3·098 | 0·10 | .. |
| | | | | 1965 | 6·135 | 5·80 | 0·60 | .. |
| | | | | 1966 | 5·297 | 4·599 | 5·29 | Nil |
| | | | | 1967 | 4·506 | 5·446 | Nil | .. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Biological Evans | M T. | 1964 | 7 836 | 0 250 | 7·70 | .. |
| | | 1965 | 11 236 | 1·566 | 9 30 | .. |
| | | 1966 | 7 724 | 1 213 | 0 40 | .. |
| | | 1967 | 2·391 | 1 210 | 1·50 | .. |
| Calcutta Chemical | M.T | 1964 | 0 03 | 0·03 | . | .. |
| | | 1965 | 0 08 | 0·10 | .. | .. |
| | | 1966 | Nil | .. | .. | .. |
| | | 1967 | Nil | .. | .. | .. |
| Chemo-Pharma | M T. | 1964 | Nil | Nil | Nil | Nil |
| | | 1965 | 0·073 | 0 073 | Nil | Nil |
| | | 1966 | 1 777 | 0 234 | 0·58 | Nil |
| | | 1967 | 6 415 | 1 849 | 5·27 | Nil |
| OPIL | M T. | 1964 | 0 02 | 0 02 | .. | .. |
| | | 1965 | Nil | .. | .. | . |
| | | 1966 | Nil | . | .. | .. |
| | | 1967 | Nil | . | . | .. |
| Pfizer | M.T. | 1964 | 17 90 | 15 60 | . | .. |
| | | 1965 | 21 70 | 21 00 | . | 0 50 |
| | | 1966 | 25 86 | 28 00 | .. | .. |
| | . | 1937 | 28 88 | 28 59 | .. | .. |
| Synbiotics | M.T. | 1964 | 27 76 | .. | 15 40 | .. |
| | | 1965 | 17 52 | .. | 33 80 | .. |
| | | 1966 | 16 18 | .. | 11 33 | . |
| | | 1967 | Nil | .. | 2 05 | Nil |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| | | *Small Scale Sector* | | | | | | |
| | | Dr. Karanth's Pharmaceutical | M.T. | 1964 | 1·60 | .. | 1·60 | .. |
| | | | | 1965 | 5·20 | .. | 5·20 | .. |
| | | | | 1966 | 4·50 | .. | 4·50 | .. |
| | | | | 1967 | 5·82 | Nil | 5·50 | .. |
| | | Suneeta Labs. | M.T. | 1964 | .. | .. | .. | .. |
| | | | | 1965 | .. | .. | .. | .. |
| | | | | 1966 | .. | .. | .. | .. |
| | | | | 1967 | 4·21 | Nil | 4·04 | .. |
| 16 | *P.A.S.* . . . | Biochemical & Synthetic | M.T. | 1964 | 90·50 | .. | 90·50 | .. |
| | | | | 1965 | 89·10 | .. | 89·10 | .. |
| | | | | 1966 | 74·32 | Nil | 75·00 | .. |
| | | | | 1967 | 74·37 | Nil | 74·37 | .. |
| | | Biological Evans | M.T. | 1964 | 68·68 | 17·64 | 51·60 | .. |
| | | | | 1965 | 63·68 | 36·85 | 29·20 | .. |
| | | | | 1966 | 60·50 | 17·54 | 44·83 | .. |
| | | | | 1967 | 54·31 | 34·69 | 22·20 | .. |
| | | Wander Pharmed | M.T. | 1964 | 19·91 | Nil | 9·90 | .. |
| | | | | 1965 | 102·72 | 9·85 | 99·10 | .. |
| | | | | 1966 | 103·96 | 6·16 | 48·40 | Nil |
| | | | | 1967 | 44·60 | 5·06 | 74·12 | Nil |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Pfizer | M T. | 1964 | 62 60 | 60 50 | .. | . |
| | | | 1965 | 75 60 | 77 50 | .. | 1 00 |
| | | | 1966 | 81 56 | 68 50 | 4 09 | Nil |
| | | | 1967 | 82 60 | 50 66 | 50 55 | Nil |
| 17 *Tetanus Anti toxin* | . Bengal Chemical | M U | 1964 | 8 00 | 8 00 | .. | 14 75 |
| | | | 1965 | 12 00 | 12 00 | .. | Nil |
| | | | 1966 | 15 00 | 15 00 | .. | Nil |
| | | | 1967 | 88 10 | 88 00 | | Nil |
| | Bengal Immunity | M U. | 1964 | 6629 | 6629 | . | |
| | | | 1965 | 3495 | 3495 | . | |
| | | | 1966 | 2993 | 2993 | Nil | Nil |
| | | | 1967 | 3562 | 3462 | Nil | Nil |
| | Biological Evans | M U | 1964 | | | | |
| | | | 1965 | . | . | | |
| | | | 1966 | 526 | 526 | . | |
| | | | 1967 | 1128 | 768 | .. | |
| | Dey s Medical | M U | 1964 | .. | .. | | |
| | | | 1965 | . | | . | . |
| | | | 1966 | 56 | 56 | .. | . |
| | | | 1967 | 240 | 284 | .. | |
| | Haffkine | M U | 1964 | 1786 | 1786 | Nil | |
| | | | 1965 | 1365 | 1365 | Nil | |
| | | | 1966 | 1876 | 1876 | Nil | Nil |
| | | | 1967 | 1880 | 1880 | Nil | Nil |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| 18 | *Prednisolone* . . . | Glaxo Labs | Kg. | 1964 | 99·50 | 26·00 | 69·00 | .. |
| | | | | 1965 | 77·60 | 17·70 | 49·00 | .. |
| | | | | 1966 | 16·00 | 20·70 | 7·61 | .. |
| | | | | 1967 | 2·20 | 17·70 | 2·17 | Nil |
| | | Merck Sharp | Kg. | 1964 | 88·00 | 17·40 | 82·00 | .. |
| | | | | 1965 | 12·00 | 8·40 | 9·00 | .. |
| | | | | 1966 | 8·00 | 6·20 | 1·00 | .. |
| | | | | 1967 | 1·90 | 4·20 | 0·40 | .. |
| | | Wyeth Labs. | Kg. | 1964 | 111·05 | 37·42 | 89·00 | .. |
| | | | | 1965 | 269·99 | 65·20 | 209·00 | .. |
| | | | | 1966 | 564·03 | 85·75 | 403·00 | .. |
| | | | | 1967 | 480·00 | 78·01 | 346·00 | 75 |

## APPENDIX IX

(*Vide* paragraph 20 1)

**Import licensing policy for the specified basic drugs and formulations**

| Sl No | Item | 1965-66 | | 1966 67 | |
|---|---|---|---|---|---|
| | | Quota percentage | Remarks | Quota percentage | Remarks |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Vitamin A & its Ester and their preparations | Not permitted to be imported | | Not permitted to be imported | |
| 2. | Vitamin B12, (Cyanocobalamin) excluding preparations thereof | Nil | A U application will be considered in consultation with the D G T D and Drugs Controller (India) New Delhi | Nil | (Same remarks as for 65-66) (Also includes hydroxocobalamin) |
| 3 | Vitamin C (Ascorbic Acid & its Salts) excluding preparations thereof | Nil | A U applications will be considered in consultation with the D G T D and Drugs Controller (India), New Delhi | | (Same remarks as for 65-66) |

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 4. | Sulfadiazine excluding preparations thereof. | 7½% | Quota licence will be valid for the import in bulk only. | 7½% | Same as under remarks for 1965-66). |
| 5. | (a) Penicillin including Phenoxy-methyl Penicillin in bulk but excluding all forms of bottled penicillin and preparations. | Nil | Applications from approved manufacture will be considered by port licensing authorities in consultation with Drugs Controller (India), New Delhi. | Nil | Applications from approved manufacture will be considered by the Regional Licensing authorities in consultation with Drugs Controller (India), New Delhi. |
| 5. | (b) Bottled Penicillin and its preparations the following only :— | | | | |
| | (i) Crystalline Penicillin G. Calcium | | | | |
| | (ii) Procaine Penicillin G. with crystalline penicillin G. only injection. | | Licence will be valid for import of 'Procaine penicillin G in Oil with Aluminium Monostearat' in bulk only. | | (Same as under remarks for 1965-66). |
| | (iii) Penicillin G. diethylaminoethylester hydroiodide. | 5% | .. | 5% | .. |
| | (iv) Procaine Penicillin G. in oil with Aluminium monostearate. | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | (v) Procaine Penicillin in oil | | | | |
| | (vi) Penicillin dressings | | | | |
| | (vii) Dibenzyl ethylene diamine dipenicillin G | | | | |
| | (c) Penicillin tablets Penicillin lozenges Penicillin ointments Bottled penicillin, the *following* only — | Nil | | Nil | |
| | (i) Crystalline Penicillin Sodium, Crystalline Penicillin Potassium | | | | |
| | (ii) Crystalline Penicillin procaine and | Nil | | Nil | |
| | (iii) Procaine Penicillin G fortified with crystalline Penicillin G (Sodium or Potassium) aqueous | | | | |
| 6 | Streptomycin and its salts | Nil | Imports will be canalised through an agency approved by *Government* and distribution to Actual Users will be made in accordance with the directions of the *Directorate* General of Technical Development | Nil | (Same as under remarks fo 196? 66) |

7. Chloramphenicol . . .

8. (a) Chlortetracycline . .

| | | | | |
|---|---|---|---|---|
| 8 (b) Oxytetracycline and Tetracycline. | Nil | .. | Nil | .. |
| 9. Amodiaquin . . . . | No specific policy laid down for this item. | . | Same as for 1965-1966. | .. |
| 10. Chloroquin Salt . . . | 2½% | Licences will be valid for import in bulk only. | 2½% | Licences will be valid for import in bulk only. |
| 11. Iodochlorohydroxy-quinoline . | | Included in List II (Banned List) of Appendix 19. | | Same as per 1965-66. |
| 12. Chlor propamide . . . | | Included in List I of Appendix 19 and as such import allowed without any restriction. | .. | Not permitted. |
| 13. Tolbutamide excluding preparations thereof | | Included in List I (Essential List) of Appendix 19 and as such imports allowed without any restriction. | | Same as for 1965-66. |
| 14. Insulin, all sorts excluding Injections of Insulin (Plain) Injection of Protamine Zinc Insulin and Injection of Globulin Insulin | | Included in List I of Appendix 19 and as such *imports* allowed without any restriction. | Not permitted to be imported | -- |
| 15. I. N. H. . . . . | Nil | -- | Nil | -- |

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 16. | Para Amino Salicylic Acid, Sodium Para Amino Salicylate, and Calcium Amino Salicylate excluding preparation thereof. | 21.5 | A. C. [illegible] through the D.G.T.D. [illegible] P.A.S. | [illegible] | [illegible] |
| 17. | Tetanus antitoxin . . . | [illegible] | Base period [illegible] | Nil | |
| 18. | Prednisolone excluding preparations thereof. | Nil | — | Nil | |

**Important Control Policy for the specified drugs as announced in Red Book for 1967-68 and as amended by subsequent Import Trade Control Notifications issued from time to time**

... ividual items was discontinued for ... ters were allowed a general quota ... The method of calculation of quotas are explained in a separate Public Notice dated 11th August 1967 given herein as annexure

... con... quired ... will ... ation of the State Drugs authorities

3 Import of free samples of drugs and medicines—In order to minimise ... s of manufacturers ... gs and medicines ... icensing authorities ... covered by List I

(i) No remittance of foreign exchange is involved

(ii) The c i f value of the consignment is reasonably small and does not in any case exceed Rs 8000 (Rupees eight thousand only)

(iii) The samples are imported in packings which are distinctly different from regular trade packings, and

(iv) Each packing is clearly marked "Physician's samples not to be sold"

Applications are to be made to the regional licensing authorities in the prescribed form and manner Only one Customs Clearance Permit will be issued to the firm whenever necessary and for this purpose only the Head Office of the firm should apply

4 Customs clearance permits for *new drugs* will be considered by the C C I & E, New Delhi but such applications should be made through the D G H S New Delhi

Policy for each of the specified drugs is extracted and given below

| Sl No | Drug (Including preparations thereof) | Import licensing policy for Established importers (General Quota) | Import licensing Policy for Actual users |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1 | Vitamin A | Originally allowed but banned from 23 8-1967. | Originally allowed but banned from 23 8 1967 |

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| 2. | Vitamin B12 | Banned | Allowed. |
| 3. | Vitamin C | Banned | Originally allowed but banned from 23-8-1967. |
| 4. | Sulphadiazine | Allowed | Allowed. |
| 5. | Penicillin | Originally allowed but banned from 23-8-1967. | Originally allowed but banned from 23-8-1967. |
| 6. | Streptomycin | Allowed | Allowed. |
| 7. | Chloramphenicol | Banned | Originally allowed but banned from 23-8-1967. |
| 8. | Tetracycline: | Allowed | Allowed. |
| 9. | Amodiaquin | Allowed | Allowed. |
| 10. | Chloroquine | Chloroquin and its salts (but not preparations) allowed under general quota. Combined imports of these items should not exceed 2% of the face value of licences. | |
| 11. | Iodo-chlor-hydroxy-quinoline. | Banned | Allowed. |
| 12. | Chlorpropamide | Allowed | Allowed. |
| 13. | Tolbutamide. | Allowed but preparations not allowed. | Allowed. |
| 14. | Insulin | Allowed but preparations not allowed. | Allowed (not preparations). |
| 15. | I.N.H. | Banned | Originally allowed but banned from 23-8-1967. |
| 16. | P.A.S. | Originally allowed but banned from 2-6-1967. | Sodium PAS, Calcium PAS and PAS acid were banned from 23-8-1967. |
| 17. | Tetanus Anti-toxin | Allowed | Allowed. |
| 18. | Prednisolone | Banned | Allowed. |

## ANNEXURE

**Public Notice No. 79-ITC(PN)/67 dated the 11th August, 1967 issued by the Government of India in the Ministry of Commerce**

2 Enquiries have been received in regard to the manner for the calculation of quotas for established importers for the item under the policy mentioned above Accordingly the position is clarified as under .

on quota basis

(ii)

(iii) I

(iv) If an established importer is not desirous of having a fresh joint quota for general drugs and medicines in the manner indicated in (iii) above, the quota certificate already held by him for drugs and medicines will also be valid for the grant of quota licences for April 1967-March 1968, to the extent given below —

(a) The consolidated quota certificates for drugs and medicines will be valid for the grant of joint quota for general drugs and medicines

(b)

quota entitlement for a joint quota for general drugs and medicines for April 1967-March 1968

(c) If the basic year of the consolidated quota certificate and the quota certificate of List III item referred to in (b) above, is common, even then the combined past imports of both the quota certificates will be taken into account for calculating the entitlement of the applicant for joint quota, provided the past imports on which the quota certificate for List III item has been issued are not included in the consolidated quota certificate. If they are included, the licensing authorities will have to exclude them while taking the combined values of quota certificates for calculating the quota entitlement of the applicant. For the purpose of such checking, the applicant is required to produce documentary evidences to the licensing authority to prove whether the past imports on which a quota certificate is held by him for any List III items have also been included in the consolidated quota certificate for general drugs and medicines or not. Documentary evidence required for this purpose will be the Bill of Entry and the invoice on the basis of which the quota certificate for List III item was issued.

3. Some of the parties have represented that they are not in a position to produce the documentry evidence required as indicated in sub-clause (iv) (c) above. The matter has deen considered and it has been decided that if the party is unable to produce the required documentary evidence, the licensing authority will, on the request of the party, reduce the aggregate value of the quota certificate for drugs and medicines (consolidated quota certificate and quota certificates for List III permissible items) held by the applicant by 20 per cent. In such cases the entitlement of the applicant for joint quota of drugs and medicines will be calculated on the balance combined value of consolidated quota certificate and quota certificates of List III permissible items held by the applicant.

**Salient features of Import licensing policy for the year 1968-69**

1 Established importers are given an import quota of 18 per cent of past year's imports for general Drugs and Medicines This quota licences are valid for import of the following specified drugs (among others) —

(i) Chloroquin and its salts

(ii) Procaine Penicillin G in oil with Aluminium monostearate (Import should not exceed 2 per cent of the face value of the licence)

(iii) Sulphadiazine

(iv) Tolbutamide

2 The drug industry is a priority industry for licensing of raw materials Actual user licences are not valid for the following specified drugs (among others) —

(i) Chloramphenicol

(ii) Halogenated derivatives of Hydroxyquinoline

(iii) Insulin—all types

(iv) I N H

(v) P A S and its salts

(vi) Penicillin G (Sodium/Potassium/Procaine) with Phenoxy Methyl Penicillin

(vii) Prednisolone

(viii) Vitamin A

(ix) Vitamin of B 12 group (Cyanocobalamin and Hydroxocobalamin)

(x) Vitamin C (Ascorbic acid) and its salts and esters

3. The following items are allowed to be imported by actual users on a respected scale subject to endorsement by the regional licensing authorities —

(i) Chloramphenicol palmitate

(ii) Chlorpropamide.

(iii) Tetracyclines and their salts



GIPN—S6—1 T C Bombay/70—12 2 71—500

# ERRATA LIST TO THE COMMISSION'S REPORT ON THE FAIR SELLING PRICES OF DRUGS AND PHARMACEUTICALS (1968)

| Page | Para Item/Table | Line | For | Read |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| ix | Item 10 | 1 | Consmetics | Cosmetics |
| x | Item 16 | 2 | as a an item | as an item |
| x | Item 20 | 7 | which, it | which, if |
| xi | Item 25 | 3 | u t should adopt | unit should adopt |
| xii | Item 30 | 3 | ensure | ensue, |
| xvii | Item 6 12 | 1 | Locating | Location |
| xxii | Item VIII | 1 | Sel-consumption | Self-consumption |
| 2 | Item (2) (b) | 1 | Expenses | expenses, |
| 6 | Para 2 2 | 16 | dicided | decided |
| 9 | Table 2 3, Item IV, Col 3 against 19. | | (Park-Davis) | (Parke-Davis) |
| 11 | Table 3.1, Col. 7, Item 1. | .. | .. | 5 |
| 16 | Para 4 1.5 | 7 from bottom | Drus Technical | Drugs Technical |

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 16 | Para 4.1.5 . . . | Last line | Standares | Standards |
| 17 | Para 4.1.7 . . . | 1 | Act. | Act |
| 21 | Para 4.2.1. . . . | 9 | Order 1965 | Order 1966 |
| 24 | Para 4.2.5. (iv) . . | 13 | g eat deal | great deal |
| 27 | Para 4.2.9 (ii) . . | 5 | wholesalers | wholesaler |
| 28 | Para 4.2.13 . . . | 2 | hc sale | the sale |
| 30 | Para 4.2.16 (iii) . . | 9 | di count | discount |
| 30 | Para 4.3.1 . . . | 5 | overnments | Governments |
| 34 | Para 5.1.1. . . . | 22 | was also to recommend | was also recommended |
| 46 | Para (vi) . . . | 5-6 | enpcouragement | encouragement |
| 46 | Para (vii) . . . | 7 | off take is not h gh | off take is not high |
| 51 | Para 5.4.7 . . . | 14 | Ind ian Pharmacopoea Committee | Indian Pharmacopoeia Committee |
| 60 | Table 6.3 against Sl. No. 4, Col. 9. | .. | 60.83 | 360.83 |
| 68 | Para 6.1.10 . . . | 3 | leading manufacturing | leading drug manufacturing |
| 81 | Table 6.12, Item 4, Col. 9 against Bombay. | ... | ... | 9 |
| 87 | Table 6.13, Total of Col. 17. | .. | 222.18 | 22218 |
| 90 | Table 6.14, Sl. No. 14, Col. 4. | .. | 5854 | 54 |

| | | | | |
|---|---|---|---|---|
| 94 | Table 7 ", Item 2 against Synbiotics under Col 7 | — | 13 6 | 13 2 |
| 95 | Table 7 2, sub heading | | Licensed/approred | Licensed/approved Installed Capacity |
| 95 | Do | Please read as | In 1962 In 1963 In 1964 | In 1965 In 1966 In 1967 |
| 105 | Table 7 2, under Col 17 against total for item (ii) | | 58 | 5 8 |
| 111 | Table 7 3, Col 4 against item 10(2) Pfizer | . | 15 6 onnes | 15 6 Tonnes |
| 113 | First para from the top | Line 8 | an applications | an application |
| 114 | Sub heading Penicillin | 8th line from bottom | in the nstalled | in the installed |
| 116 | 7 1 7 Sub-heading 'Chlorquin | Line 2 | No reasons | No reasons |
| 117 | 7 1 7 . | 13 | a in many | as in many |
| 118 | 7 2 2 . . . . | 1 | for basies | for basic |
| 118 | 7 " 2 . | 7 | are simplar | are simpler |
| 1"0 | Table 7 5, Item 3, Col 4 | | Tablests | Tablets |
| 121 | Table 7 5, Item 14, Col 2 | | Hoelist | Hoechst |
| 134 | Table 8 1, Item 8(2), Col 2 | | Cynamid | Cyanamid |
| 139 | Table 8 1, Item 16 (1) Col 2 | | Synthece | Synthetic |
| 141 | 8 1 3 Sub heading I N H | Last line of the page | 967 | 1967 |

| | | 3 | 4 | 5 |
|---|---|---|---|---|
| 144 | Sub-heading 'Sulphadizine' | 4th line | on acetyl | acetyl |
| 148 | Sub-para 'Albert David' | 2 | 2.5 | 2.4 |
| 148 | Sub-para 'Atul Products' | 2 | 41.2 tonnes in | 41.2 tonns. It |
| 155 | Sub-para 'vitamin C'. | 10 | inabiliy | inability |
| 155 | Sub-para 'Tetracyclines' | 1-2 | installed c city | installed capacity |
| 155 | Sub-para 'Tetracyclines' | 2 | 21.5 tonnes | 21.5 tonnes but |
| 180 | Table 11.4, Sub-heading under Col. 4 to 6. | .. | with 1964 as bare | with 1964 as base. |
| 182 | 12.1.1 . . . . | 10 | Rs. 27.51 crores | 26.51 crores |
| 187 | Table 12.2 . . . | The figures in 3rd row against Sl. No. 2 "Vitamin B-12 and B-12 (b)" are total. Please draw a line after 2nd row. | | |
| 190 | Table 12.2, Total against Sl. No. 18 under Col. 9. | .. | 1,262 | 1,263 |
| 207 | Table 12.5, Sl. No. iv under Col. 4 against item No. 16. | .. | East Inda | East India |
| 221 | 13.1 . . . . | 20 | hree weeks | three weeks |
| 222 | 13.2 . . . . | 2 | Both or basic | both for basic |
| 222 | 13.2 under 1. 'Salts' . | 7 | Stabilishers | Stabilisers |
| 223 | Under item 10 'Solubility'. | Line 1 | d ugs | drugs |
| 229 | 13.16 . . . . | .9 | is a by a | is by a |

| | | | | |
|---|---|---|---|---|
| 231 | 13 19 . . . . | 3 | rand names | brand names |
| 233 | 13 21 . . . . | 17th line from top | there tolerances | the tolerances |
| 238 | 14 3 . . . . | 1 | nedicines were | medicines were |
| 241 | Table 14 1 under Col 5 | 4th line | p ovision, | provision, |
| 244 | Table 14 1, Col 6 against Italy | 4th line | d fence oi | defence or |
| 245 | Table 14 1, Col 2 against Switzerland | 2nd line | *utilizable* | *utilisable* |
| 247 | 14 7 . . . . | 10 from bottom | drugs and held | drugs are held |
| 247 | 14 7 . . . | 10 11 from bottom | Forigners | Foreigners |
| 248 | 14 7 "The case for patents' | 2 | to the drung | to the drug |
| 250 | 14 8 . . . | 5 | 47 per cent in | 47 per cent, in |
| 252<br>253 | Table 14 2, sub heading Cols 5, 8, 11 | | Extent | Extant |
| 253 | 14 11 . . . | 4 | Tolubtamide | Tolbutamide |
| 253 | Table 14 2, Col 13, Item 3 | 6-7 | Please *delete* "and Abdul Haq, India" | |
| 254 | Table 14 2, Col 13 . | . | Chemi | Chemic |
| 255 | Against Item 6 . | | | |
| 260 | 15 7 (4) | 3 | imported material | imported raw material |
| 261 | 15 7 1, under 'Amodiaguin' | 4 | intermediates | intermediate |
| 61 | Do. . . | 10 | *Add* 'if' after 'hand' | |

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 261 | 15.7.1 under 'Amodiaguin' | 11 | *Delete* 'if' last word of this line. | |
| 261 | 15.7.1 under 'Chlorpro-pamide'. | 5th line from bottom | given | gives |
| 262 | 15.7.1 | 8 | and produces, | and produces |
| 263 | 15.7.2 under 'Strepto-mycin'. | 6 | saving or | saving of |
| 264 | 15.7.3 under 'Penicillin' | 3 | cuntries | countries |
| 264 | 15.7.4 | 1 | Sulphadiaine | Sulphadiazine |
| 264 | 15.7.4 | 7 | Sulphadizine | Sulphadiazine |
| 264 | 15.7.4 | 5 | Aminodiaine | Aminodiazine |
| 265 | 16.1 | 9 | of imported | or imported |
| 266 | 16.3 | 6 | Pharmocopocia | Pharmacopocia |
| 266 | 16.4 | 7 | Standard | Standards |
| 266 | 16.4 | 10 | An oiological | and biological |
| 266 | 16.5 | 1 | Durgus | Drugs |
| 267 | Table 16.1, Col. 2 | 2 | Ildo 'chlor- | Iodo chlor- |
| 267 | Table 16.1, Col. 2, Item 6 | 1 | All froms | All forms |
| 270 | 17.3 | 6 | enforce ment | enforcement |
| 270 | 17.4.1 | 6 | licences | licence |
| 271 | 17.4.2 | 11 | regulartory | regulatory |
| 273 | 7. Orissa | 1 | durgs | drugs |

| | | | | |
|---|---|---|---|---|
| 274 | 17 6 2 | 10 | Durg Laboratory | Drug Laboratory |
| 274 | 17 6 2 | 22 | testing or | testing of |
| 274 | 17 6 2 | 28 | as applied | was applied |
| 275 | 17 8 | last line | durg | drug |
| 276 | 17 8 | 9 | the esting | the testing |
| 278 | Under item 8 Glaxo Lab | 3 | a adhered | are adhered |
| 279 | Item 10 | 9 | stagel | stage |
| 281 | 17 9 under 8 | 4 | Distilles | Distilled |
| 286 | Table 17 1, Col 3, under Item 7 | 8 | 19666 | 1966 |
| 297 | 18 | 3 from the bottom | restored to | restored to to |
| 299 | 18 7 | 2 | emanage | emanate |
| 302 | 18 12 | 1 | Lucknows | Lucknow |
| 307 | Table 19 2 under 'Remarks' against item 28(27) | | c nt | cent |
| 307 | Table 19 2 against item 28 (28) | | 28(28) (A) | 28(28) (b) |
| 307 | Table 19 2 under 'Remarks' against item 28(28) (6) | 1 | rate | rates |
| 308 | Table 19 2, Col 1, Item (ii) | | Penicillin and its | Penicillin and its products not *otherwise specified* |
| 308 | Table 19 2, Col 1 under (iv) | 2 | execluding | excluding |

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 312 | Table 19.5 | | '28' should be *read* under Col. 1. | |
| 314 | Table 19.5 against item 28 A, Col.2. | 1 | Petent | patent |
| 321 | Against item 12 Col. 2 | 2 | as Sals or | as Salts or |
| 323 | Table 19.7, explanation 2, Col. 2. | 6 | of other | or other |
| 325 | Table 19.8 against item 3, Col. 2. | 1 | Homocopathic | Homoeopathic |
| 327 | 19.4.2, Item (4) | 1 | lac of | lack of |
| 327 | Do. | 13 | 10 per cents. | 10 percent. |
| 328 | 19.4.4 | 2 | Manufacturers | Manufacturers' |
| 329 | 20.1 | 18 | was and overall | was an overall |
| 333 | 20.5 | Line 2 | import | imports |
| 335 | 20.6 under Insulin | Line 1 | fell-down | fell down |
| 340 | 21.5 | Line 1 | evel | level |
| 343 | 22.1.1 | 8 | Man'facturers | Manufacturers |
| 344 | Table (b), Item 17 | | Zandu Pharmaceu ombay. | Zandu Pharmaceuticals, Bombay |
| 349 | Table 22.3, Sl. No. 8(ii) | | Cynamid | Cyanamid |
| 353 | Table 22.3, Sl. No. 20 | | Hoecht | Hoechst |
| 357 | Table 22.5, Sl. No. 7, Col. 2. | | Boehringer Knoll | Boehringer Knoll |

| | | | | |
|---|---|---|---|---|
| 357 | Table 22 5, Sl No 6, Col 6 | . | 73 | 473 |
| 358 | Table 22 5, Sl No 16, Col 8. | | 530 | 4530 |
| 360 | 22 2 4 . . . | 10 from bottom | that less amount | that pass amount |
| 362 | 23 1 2 under 3 3 1 . | 6 from bottom | cond tions | conditions |
| 364 | Table 23 1, Sl No 21 . | | Bechnger knoll | Boehringer Knoll |
| 370 | 23 2 5 . . . | 1 | basis Th | basis The |
| 370 | Table 23 6, Heading Col 3 | | Employed | Employed capital |
| 371 | Table 23 7, Item 3, Col 4 | | Bracco Industrial Chemical | Bracco Industrial Chemica |
| 372 | Table 23 7, Sl No 9, Col 2 | | Cynamid | Cyanamid |
| 373 | Table 23 7, Sl No. 15, Col 2. | | Hoecnst | Hoechst |
| 374 | Table 23 7, Sl No 23, Col 8. | | 2 9% after taxes | 2 97% after taxes |
| 378 | 23 2 11 . . . | 4 | Biacco Industrial Chemical | Bracco Industrial Chemica |
| 378 | 23 2 13 . . . | last line | Suibbs | Squibbs |
| 381 | 23 3 1 . . | 19 | The latters | the latter |
| 391 | Table 24 2, Sl No 16(3), Col 2 | | Wgeth labs | Wyeth Labs |
| 394 | Table 24 3, Sl No 3, Col 1 | | K | U K. |

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 401 | Table 24.4, Sl. No. 16, Col. 4. | .. | 100 ml/vial | 100 mcg/ml. |
| 405 | Table 24.4, Sl. No. 4, Col. 5 against 50 mg. | .. | Bottle of 100 tabs. | Bottle of 1000 tabs. |
| 405 | Table 24.4, Sl. No. 9, Col. 8 | .. | 15.18 | 15.78 |
| 409 | Table 24.4, Col. 8 | Last line | 5.96 | 5.95 |
| 411 | Table 24.4, Sl. No. 10, Col. 7. | .. | 34.23 | 347.23 |
| 412 | Table 24.4, Sl. No. 2, Col. 8. | 1 | 5.05 | 5.50 |
| 416 | Table 24.4, Col. 3, Item 2 under 'Chlorpropamide'. | .. | DI BINOL | DIABINOL |
| 425 | Table 24.4, Col. 5, Item. 16 | .. | 10 × 10 tabs st ip | 10 × 10 tabs strip |
| 427 | Table 24.5, Item 5, Col. 3. | .. | DICRYSTICIN -5 800 | DICRYSTICIN-S 800 |
| 427 | Table 24.5, Item 5, Col. 4 | 5-6 from bottom | *Delete* 'and' at the end of item (1)<br>*Read* 'and' at the end of item (2) | |
| 428 | Table 24.5, Col. 5 against Martin & Harris. | .. | 100 | 1000 |
| 433 | Table 24.6, Sl. No. 7 (1), Col. 8. | .. | 13/9 | 13/9 d |
| 434 | Table 24.6, Sl. No. (1), Col. 8. | .. | 40/.sh | 40/5 sh |
| 434 | Table 24.6, Sl. No. 11 (2), Col. 1. | .. | *Delete* 1 × 1 gm. | |

| | | | |
|---|---|---|---|
| 434 | Table 24 6, Sl No 11(1), Col. 7. | *Add* "* 9/5 sh" *against* 'per 10 vials' | |
| 434 | Table 24 6, Sl No 11(2), Cols 6 and 7. | *Read* 'per pack' under Col 6 and *delete* 'per pack' from Col. 7. | |
| 435 | Table 24 6, Sl No. 15(2), Col. 3 | Tetracycline | Tetracycline caps |
| | | | s.d. |
| 435 | Do. Col 7 | 10/10 d | 10/10 |
| 438 | Table 24.6, Sl. No 23(1), Col 4 | Botte of | Bottle of |
| 440 | Table 24 6, Sl No 32 (3), Col 8. | 300 Forints | 330 Forints |
| 441 | Table 24 6, Sl. No 34(1), Col 7. | Sh. 400 | Sh. 440 |
| 445 | Table 24 7 N B | deale | dealer |
| 452 | Table 24 9, Sl No 11, Col 11 | 1 17 | 1 19 |
| 454 | Table 24 10, Sl No 2 | "2 Smith Stanistreet COBASTAN" entries in Cols 1, 2 and 3 should be brought down and *against* these entries in Cols 4 to 10 should be *added* as under : | |

| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|
| 500 mcg/ml | 5 ml vial | per vial | 3 60 | 4 45 | 2 00 | 55 0 |

| | | | |
|---|---|---|---|
| 459 | Table 24 10, Col 10 *against* Burroughs Wellcome | 7 | 27 7 |
| 466 | Table 25 1, Sl No 26, Col 11 | 28 | 28 7 |

| 1 | 2 | 3 | 4 | 5 |
| --- | --- | --- | --- | --- |
| 466 | Table 25.1, Sl. No. 26, Col. 5. | 6 from bottom | 100 mg × 100 tabs | 100 mg × 1000 tabs. |
| 493 | 27.3.5 . . . | 3 from bottom | engaged only | engaged only in |
| 493 | 27.3.6 . . . | 4 | that what | than that |
| 496 | 27.3.9 . . . . | last line | outside source | outside sources |
| 496 | 27.3.10 . . . | 3-4 | owned concernes | owned concern |
| 496 | 27.3.10 . . . | 4 | accending | ascending |
| 501 | 27.4.5 . . . | 8 from bottom | analyses | analysis |
| 503 | Table 27.21 Sub-Heading Col. 2. | .. | Nos. of Cos. | No. of Cos. |
| 505 | 28.1. 3 . . . | 4 | Analyses | Analysis |
| 508 | Table 28.1, Sl. No. 4, Col. 2. | 2 | Hyderaba': | Hyderabad |
| 511 | Table 28.1, Sl. No. 9, Col. 5, Item 11. | .. | A Vitamin | Vitamin A |
| 528 | 28.1.10 . . . | Line 1 | to he extent | to the extent |
| 528 | 28.1.11 . . . | Last line from bottom | uture estimates also | future estimates also. |
| 529 | 28.1.14 . . . | 2 | Sparities | disparities |
| 534 | 28.1.26 . . | 4 from bottom | exmplyees | employees |

| | | | | |
|---|---|---|---|---|
| 535 | 28 1 27 Bottom | 11 from bottom | wihch | which |
| 536 | 28 2 1 | 1 | Glaxo Lbs | Glaxo Labs |
| 538 | 28 3 3 | Table | Rs Gramme | Rs /Gramme |
| 543 | 28 6 2 | 7 | ins the original | in the original |
| 547 | 28 7 2 2 | 3 | Sulhate | Sulphate |
| 547 | Do | 5 | doubted | doubled |
| 554 | 28 9 4 3 | 7 | Butonaol | Butanol |
| 557 | 28 11 1 | 1 | immunity | Immunity |
| 558 | 28 11 5 | 6 | hand | hands |
| 562 | 28 12 11 | 4 | manufacture | manufactures |
| 563 | 28 13 2 | 2 | for which Pfizer | of which Pfizer |
| 569 | 28 16 2 | 6 | wes contemplating | was contemplating |
| 571 | 28 16 8 | Last line | addtional | additional |
| 572 | 28 16 12 | 2 from bottom | has been | have been |
| 573 | 28 17 4 | 2 | duiring 1965 66 | during 1965 66 |
| 575 | 28 17 7 | 5 | Act vated | Activated |
| 591 | Table 29 1, Col 13 | 1 | 5 | 5 28 |
| 591 | Do | 2 | 6 0 | 6 07 |
| 591 | Do | Lastline | 16 0 | 16.10 |
| 598 | Table 29 1, Col 8, Item VI Glaxo | 2 from bottom | 8 71 | 9.71 |
| 601 | Table 29 1, Col 9, Item (i) Pfizer | — | 5 72 | 6 72 |

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 609 | Table 29.2, Sl. No. 17, Col. 2. | .. | Tatanus | Tetanus |
| 613 | Table 30.1 sub-heading of Col. 4. | 4 | gentic name | generic name |
| 615 | 30.2 under Idochloro-hydroxy quinoline. | 9 | are slighly | are slightly |
| 617 | Table 30.2, Sl. No. 2, Col. 7, Item (4). | .. | Martitny & Hroris | Martin & Harris |
| 619 | Table 30.2 against Sl. No. 7, Col. 7, Item (1). | .. | Alembic Chemiqcal | Alembic Chemical |
| 624 | 31.3 | 3rd line from bottom | returnon | return on |
| 625 | 31.4 | line 1 | with | With |
| 626 | 31.5 | line 4 from bottom | investments | investment |
| 627 | 31.7 | line 5 | regurded | regarded |
| 628 | 31.9 | line 15 | namely | namely, |
| 633 | Sl. No. (16) | lines 1-2 | bye-products | by-products |
| 634 | Sl. No. (23) | line 2 | Chloropropamide | Chlorpropamide |
| 636 | Sl. No. (35) | line 4 | analysis mor | analysis more |
| 640 | Under (b), Sl. No. 9 | .. | 16/1 | 46/1 |
| 640 | Under II, Sl. No. 3 | .. | Chemical | Chemical, |

| | | | | |
|---|---|---|---|---|
| 640 | Do. | | Bellass is | Bellassis |
| 641 | Sl No 8 | | New Pharma | Neo Pharma |
| 641 | Sl No 10 | | Ltd, Sovoy | Ltd, Savoy |
| 641 | Under (b), Sl No 2 | | Qunochem | Quinochem |
| 641 | Under II, Sl No 46 | | The Angle-Trench | The Anglo-French |
| 642 | Sl No 62 | | Mission Raw | Mission Row |
| 642 | Sl No 87 | | Stddmed | Stadmed |
| 643 | Sl No 92 | | Cheebrugh | Chesebrugh |
| 643 | Sl No 95 | | Herbertsors Ltd, | Herbertoons Ltd, |
| 643 | Sl No 101 | | Tiecicen | Tiecicon |
| 643 | Sl No 102 | | T T Krishnamachai | T T Krishnamachari |
| 643 | Under (b), *Sl No 17* | 2 | Acichera Laboratries | Acichem Laboratories |
| 643 | Sl No 20 | 2 | Phalton Road | Palton Road |
| 647 | Sl No 132 | 2 | P O Box No 680 | P O Box No 1680 |
| 630 | Sl No 215 | | Sobhagnmal Building | Sobhagmal Building |
| 650 | Sl No 234 | | *Add* @ before Sl No. 234 | |
| 657 | 480 | | Sarta Bose | Sarat Bose |
| 661 | Heading GOVERN-MENT DEPART-MENTS | | VII Govt Deptts | IV Govt Deptts |
| 661 | VII (a) | | *General Govt* | Central Govt |
| 661 | Sl No 10 | | General Excise | Central Excise |
| 664 | Sl No 40 | | Ananda Exporum | Ananda *Emporium* |
| 664 | *Sl No 46* | | Sayaii Road | Sayaji Road |

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 665 | Sl. No. 65 . . . | .. | Kolahpur | Kolhapur |
| 669 | Sl. No. 85 . . . | .. | Nandea | Nanded |
| 671 | Item IX others . . | .. | *IX others | IX others |
| 671 | Last line . . . | .. | Major etc. | *Major etc. |
| 672 | Appendix II . . | Heading | Commission | Commission's |
| 673 | Appendix III . . | Sl. No. 1 | Alembic Chemicals | Alembic Chemical |
| 684 | Appendix V-A (1), Sub-para third. | 2 | antimalrials | antimalerials |
| 684 | Appendix V-A, Sub-para fifth. | 2 | Polling | Pooling |
| 685 | (4) Sub-para second . | 2 | Intermediates then | Intermediates than |
| 685 | (5) . . . . | 3 | importance the practice | importance in the practice |
| 686 | Sub-para third of the page | 3 | so adjust | so adjusted |
| 687 | (9) Sub-para third . | 3 | (2) No tessential | (2) not essential |
| 689 | Sub-heading' self sufficiency | 2 from bottom | Occasion | Occasional |
| 691 | Appendix V-D 1 (b) . | .. | National Formula | National Formulary |
| 701 | Sl. No. 7, Col. 3 . . | .. | Sulphadizine | Sulphadiazine |
| 712 | Sl. No. 3, Col. 3 . . | .. | IHN | INH |
| 712 | Sl. No. 5, Col. 3 . . | .. | Sulphadiazinel | Sulphadiazine |
| 749 | Headings . . . | 1 | Important control | Import Control |
| 752 | 3 . . . . | 6 | Certficate | Certificate |

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